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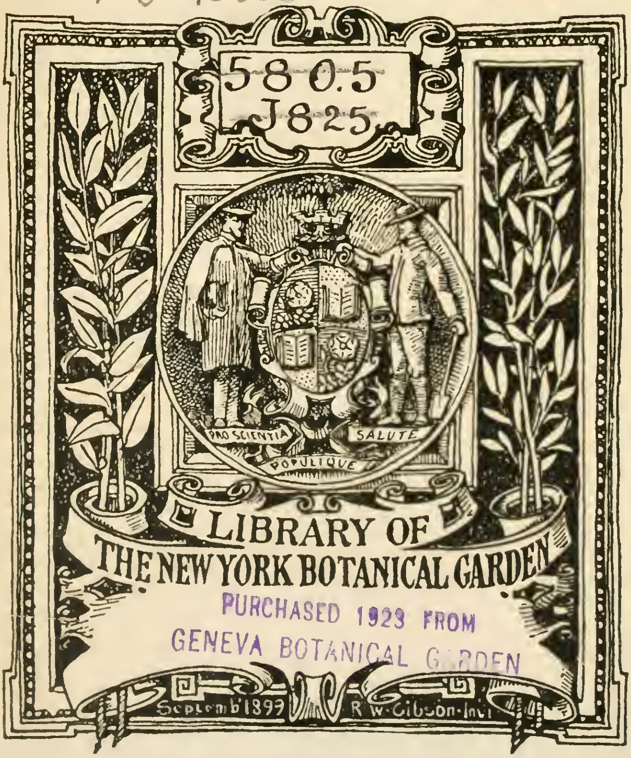
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The portrait of Henry Trimen (pages iv, 497, 498) was not issued with this volume, as shown by a note on the original cover of the December number; apparently it was never published. — J.H.B., 23 IV 1930.

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EDITED BY

JAMES BRITTEN, F.L.S.,

SENIOR ASSISTANT, DEPARTMENT OF BOTANY, BRITISH MUSEUM (NATURAL HISTORY),
SOUTH KENSINGTON.

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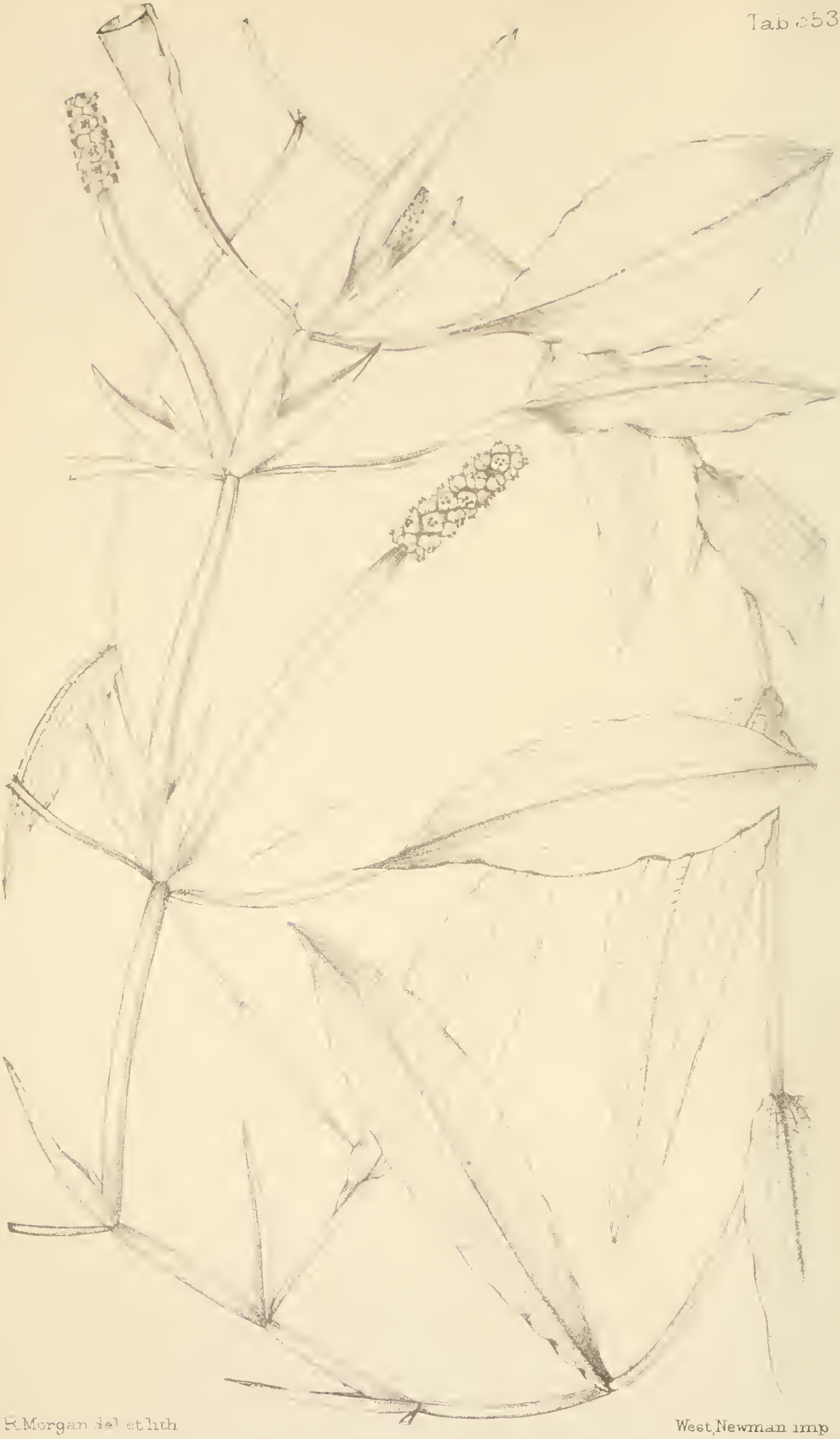
Tab 353.



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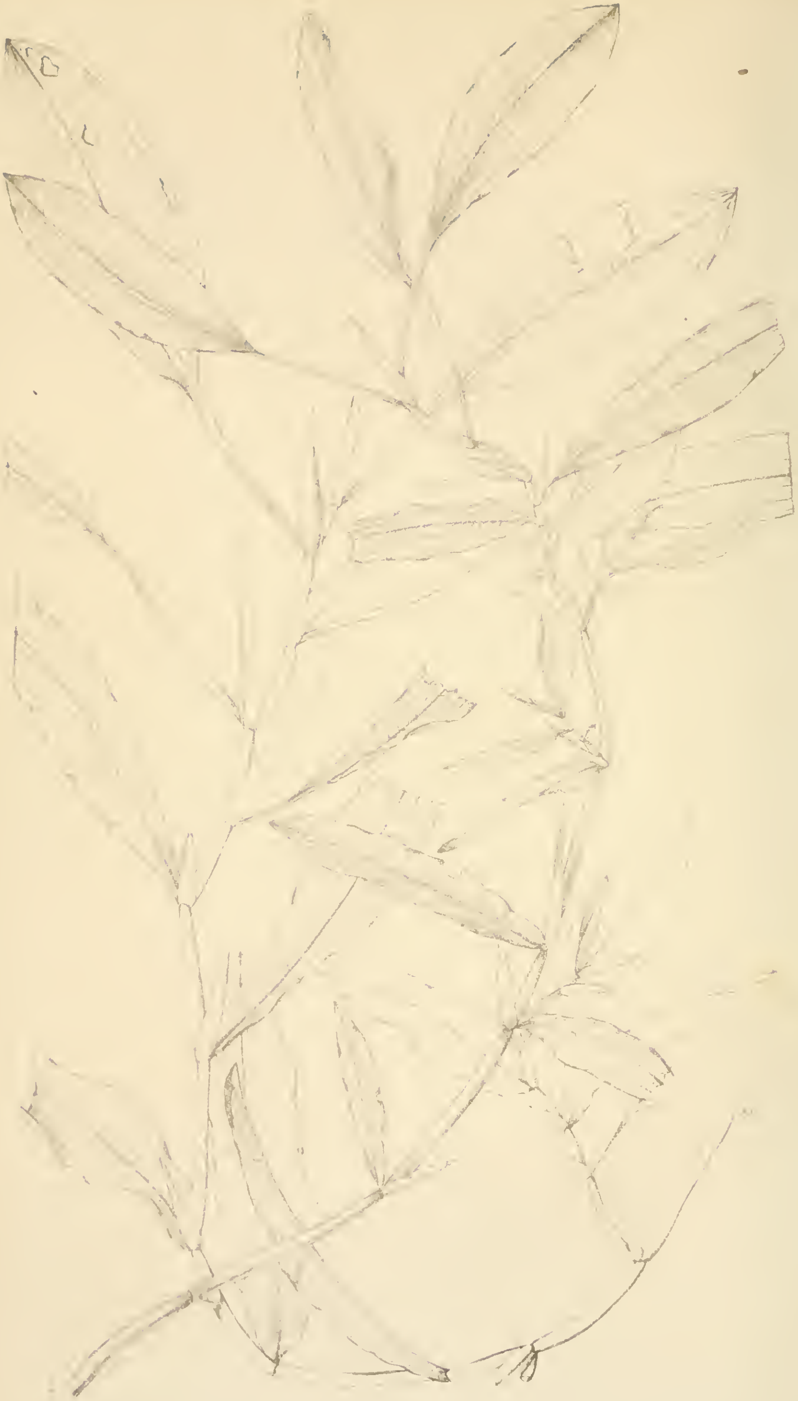
West, Newman imp.

Potamogeton nitens *Web.* forma involuta *Fryer.*



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Potamogeton nitens *Web.* forma involuta *Fryer*.

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POTAMOGETON NITENS Weber, f. INVOLUTA.

By Alfred Fryer.

(Plates 353 & 354.)

Potamogeton nitens Weber, forma involuta mihi. *Rootstock* with stout far-creeping stolons. *Stem* terete, simple below, much branched above, 1–5 ft. long. *Lower leaves* semi-amplexicaul, *longitudinally involute*, broadest at the base, tapering gradually to the apex, many-ribbed, with coarse often prominent ascending reticulations. *Upper leaves coriaceous*, lanceolate, elliptical, oval, or spathulate, with flattened petioles equalling or exceeding the lamina, produced *singly opposite*, or in pairs subtending, *the peduncles*, abundant on both flowering and barren branches. *Stipules* persistent, *involute*, herbaceous or horny, blunt. *Peduncles equal*, often curved, shorter than the subtending leaves. *Flower-spike* short, *abortive*, usually with closed, rarely with open, flowers. *Fruit imperfect*, compressed, keeled. Whole plant dark green, often with reddish stems. Probably a hybrid between *P. heterophyllus* and *P. perfoliatus*, or between the latter and *P. Zizii?*

This *Potamogeton* grows abundantly in Blackbush Drain and some adjacent ditches near Whittlesea, Cambridgeshire. It is distinguished from all other forms of *P. nitens* hitherto described by its involute stem-leaves, and by its very freely produced coriaceous floating leaves resembling those of *P. Zizii*. When growing it may easily be mistaken for that species, and in some of its states for *P. decipiens* and *P. heterophyllus;* in fact, it is in some degree a linking form between these three species and such obscure and doubtful species as *P. varians*, *P. falcatus*, and *P. coriaceus*.

AUG 7 - 1923

Within its own limits f. *involuta* varies from the typical form figured in Tab. 351 to *P. curvifolius* Hartm. When growing in shallow water it approaches the No. 43 of Dr. Tiselius's *Potamogetones Suecici*, *P. nitens* f. *vadosa*, but perhaps of all the *nitens*-forms issued in that beautiful publication our plant most nearly resembles No. 49, *P. nitens* e. *innominatus*, especially in the rare state with expanded flowers.

Although the drupelets are abortive, yet they are sufficiently developed to make it seem likely that in exceptional cases they may ripen and reproduce the species from seed. Indeed, there is much in the local distribution of the form to suggest this as actually taking place. Either this is the case, or the two parent plants frequently cross in different parts of the locality. Certainly the local distribution does not indicate diffusion by *division* from a single plant by winter-buds or otherwise; many individual plants must have originated from seeds.

Perhaps the most striking difference between f. *involuta* and the previously described forms of *P. nitens* lies in the abundantly developed coriaceous floating leaves; these amount to as many as forty or fifty on a single plant, and are rarely absent either on flowering or autumnal flowerless states, and are equally abundant in deep and shallow water. Probably in this respect our plant resembles that originally described by Weber; I append this description, kindly sent to me by my friend Dr. Tiselius:—

"*Potamogeton nitens.* P. foliis lanceolatis oppositis Web. in fossis prope Nostorf. Folia remota, opposita, longe petiolata, lanceolata, petiolo nonnihil longiora, integerrima, superne nitentia. Pedunculus longus, crassiusculus. Spica multiflora.

"Habitus *P. natantis*, sed planta tenera, multo minor, folia angustiora. Idem tamen videtur Potamogeton foliis lanceolatis oblongis, petiolis longis, Gronovii Flor. Virg. p. 139.

"*P. natans β.* Linn. Spec. Plant. i. p. 182.

"Misit simile specimen Upsaliæ lectum cl. Ehrhard sub nomine varietatis *Pot. lucentis.* A *lucente* autem quam maxime differt foliis oppositis, multo brevioribus (G. H. Weber, Supp. Flor. Holsat. 1887, pp. 5, 6)."

Much of this description agrees very well with our plant, which is a true *nitens*-form, although distinct in some respects from any hitherto described. Dr. Tiselius writes (*in litt.* July 9th, 1895):— "Your *P. nitens* f. *involuta* is very beautiful; it seems, however, to me to be a form originating in the same way as other forms of *nitens.* Peduncles, spikes, stipules, and stalks, are those of *P. nitens*, but the leaves are nearer to those of *P. gramineus.* . . . . I do not think I have seen it in any herbarium, nor have I found it on the Continent."

In the summer of 1895 I found the "land-form" of our plant. It is very distinct in habit from the tufted land-forms of *P. heterophyllus* and *P. Zizii*, and closely resembles the specimens *a.* and *b.*, No. 44, in Dr. Tiselius's *Pot. Suec. Exsicc.*[*]

Beautifully and carefully as Mr. Morgan has drawn the land-form, it has been impossible to adequately represent the coriaceous or semicoriaceous texture of the leaves without the aid of colour. The specimen figured was growing entirely out of water, and nearly every leaf was more or less coriaceous. I may add that, although this land-form was found in considerable abundance, no examples approaching Dr. Tiselius's specimens, No. 44, *d.*, *e.*, and *f.*, were to be seen.

---

[*] *c.* and *f.* on this sheet are like the land-forms I have described under *P. varians*, and *d.* and *e.* on the same sheet appear to me to be shallow-water forms of the same species. Cambridgeshire specimens exactly match all these.

I have to thank Mr. Morgan once more for the great pains he has taken in drawing his two accurate plates of this plant. The limited space of an 8vo plate did not admit the insertion of the characteristic involute stem-leaves; a drawing was prepared in which these were fully shown, but we thought it better to figure the autumnal barren shoot and the land-form in the second plate, especially as the involute leaves may easily be understood from the description.

Tab. 353 represents a flowering branch. Tab. 354, fig. 1, the land-form; and fig. 2, a barren autumnal shoot.

A PRELIMINARY LIST OF MALDIVE PLANTS.

By Henry Trimen, M.B., F.R.S.

Since the year 1888, I have had in my possession a small collection of plants collected on Malè I. by Capt. A. C. Christopher, A.D.C. to Sir A. Gordon (now Lord Stanmore, at that time Governor of Ceylon), who visited the Maldives in a ship of war. I have always hoped to be able to add to it by personal investigation on the spot, but this now seems unlikely. A few species were added by some scraps picked up by Mr. Haly, Director of the Colombo Museum, in 1892; but, so far as I know, no collector with any botanical knowledge has visited the Archipelago, nor are there any specimens from it in our London herbariums. Also, with the exception of a few notices of some plants cultivated in the islands, I believe nothing has been published on their vegetation. Incomplete and meagre as it is, I therefore think it may be worth while to put on record the following list, as embodying what is known up to the present on the subject.

A full general account of the Maldive group will be found in the Report of Mr. H. C. P. Bell, of the Ceylon Civil Service, who visited Malè in 1879, in the official Ceylon "Sessional Papers" for 1881 (but not published till 1883). Unfortunately he did not collect plants, but he brought back a few scraps which were examined by the late Mr. W. Ferguson, F.L.S., of Colombo, who was, however, only able to identify two or three of them.

The Maldives are coral islands, and form a large archipelago extending from 7° 6′ N. lat. to a little south of the equator, 0° 42′ S. lat. There are more than twenty atols in all, the most northerly being 350 miles from Cape Comorin, in India, and 400 from the nearest point of the Ceylon coast. There are said to be at least 1200 islands, but many are very small. The principal island, containing Malè, the capital, is one mile long by three-quarters of a mile broad, and I believe that it is on this alone that any plants have been collected. The inhabitants, probably originally of the same race as the Sinhalese, are now mainly Arab, and became Mohammedan at the end of the twelfth or beginning of the thirteenth century. The ruler is termed Sultan, and is under the suzerainty of Ceylon, whither an embassy with gifts[†] for the Governor is annually sent.

In the following list the probably or certainly *cultivated* species are printed in italics, and among these the *weeds* of cultivation are marked with an asterisk. Probably all of these were introduced from Ceylon, with which, especially with Galle, there has always been constant communication. The rest appear to be wild, that is, brought by natural causes, especially by the currents and waves of the ocean. All are from Capt. Christopher's collection, unless otherwise stated:—

*_Argemone mexicana_ L. (Haly.)
Anona muricata Dum.? ("Custard-apple.")
Calophyllum Inophyllum _L._ ("Duburi," Mald.[‡])
Sida humilis _Willd._
Abutilon indicum _G. Don._
Hibiscus tiliaceus _L._
Thespesia populea _Corr._ ("Hirundu," Mald.)
Gossypium sp. ("Kafa," Mald.)
Averrhoa Bilimbi L.
Citrus Limonellus Hassk. ("Lime.")
C. Aurantium L. ("Orange.")
C. Decumana L. ("Shaddock.")
Triphasia trifoliata DC.
Zizyphus Jujuba Lam. ("Kunnaru," Mald. "Plum.")
Vitis Linnæi _Wall._
Moringa pterygosperma Gaertn.
Indigofera tinctoria L.
Dolichos Lablab _L._
Cassia auriculata _L._ ("Ranawia," Mald. Bell.)
C. Sophera _L._ ("Digu-tiyana," Mald. Bell.)
Tamarindus indica L.
Adenanthera pavonina L. (Bell.) Perhaps planted.
*_Bryophyllum calycinum_ Sal. (Haly.)
Terminalia Catappa L. (Bell.) Perhaps wild.
Psidium Guyava L. (Bell.)
Eugenia Jambos ("Rose-apple," Bell.)
Punica Granatum L. (Ibn Batuta.[§])
Lawsonia alba L. ("Junapa," Mald.)
Sonneratia acida _L. f._
Pemphis acidula _Forst._ ("Kuradi," Mald.)
Cucurbita moschata Duch. ("Pumpkin." Bell.)
Oldenlandia corymbosa _L._ (Haly.)
O. umbellata _L._
Morinda citrifolia _L._ ("Ahi," Mald.)
*_Ageratum conyzoides_ L.
Launæa pinnatifida _Cass._
Scævola Kœnigii _Vahl._
Jasminum Sambac Ait.
J. sp. (specimen insufficient).

[†] Among these are always some very handsome and well-made mats. Mr. Bell informs me that the plant (probably a sedge) of which they are made is called "Hau," and grows only in the southern atols. I have seen no specimen of it.

[‡] The Maldive names here given are from Mr. Bell's Report. Many are taken from Pyrard de Laval's Vocabulary, 1602–7, the old French spelling there given having been altered by Mr. Bell.

[§] Ibn Batuta, the Moorish traveller, lived in the Maldives for a long period in 1343–4. A translated account of his sojourn there will be found in *Trans. Ceylon Branch R. Asiatic Soc.*, vii., extra number, 1883.

Plumeria acutifolia Poir.
**Vinca rosea* L.
Calotropis gigantea *Br.*
Tournefortia argentea *L. f.*
Solanum Melongena L. ("Brinjall." Bell.)
**Physalis* sp.
Capsicum sp.
Justicia procumbens *L.*
Lippia nodiflora *Rich.*
Vitex Negundo *L.* Perhaps introduced.
Clerodendrum inerme *Br.*
**Mirabilis Jalapa* L. ("Asarumu," Mald.)
Pisonia morindæfolia Br. (*P. alba* Span.). I take the "Los," Mald., to be this, but have seen no specimen.† It is not improbably a native, introduced by the sea as other littoral species.
Amarantus gangeticus L.
Nothosærva brachiata *Wight.*
Ærua lanata *Juss.*
Piper Betle L.
P. nigrum L.
Euphorbia hirta *L.*
Phyllanthus Niruri *L.*
Acalypha indica *L.*
Ricinus communis L.
Manihot utilissima.
Ficus benghalensis L.? ("Nika," Mald. "Banyan." Bell.)
Artocarpus integrifolia L. ("Sakkeyo," Mald.)
A. incisa L. f. ("Bambakeyo," Mald.)
Pouzolzia indica *Gaud.*, var. alienata *L.*
Gloriosa superba *L.* ("Vihalagodi," Mald.)
Ananas sativa.
Musa paradisiaca L. (Bell.)
Dioscorea sp. ("Hittala," Mald.)
Pandanus odoratissimus *L. f.* ("Ma-kahikeyo," Mald.)
Areca Catechu L.
Cocos nucifera *L.* ("Karhi," Mald.)
Fimbristylis spathacea *Roth.*
Panicum miliaceum L. ("Kudibai," Mald.)
Setaria italica Beauv. ("Ura," Mald.)
Zoysia pungens *Willd.*
Saccharum officinarum L.
Eleusine ægyptiaca *Gaertn.*
E. coracana Gaertn. ("Bimbi," Mald.)
Eragrostis plumosa *Link.*
Bambusa vulgaris Wendl.

To this list may be almost certainly added the following:—

Guettarda speciosa *L.*
Vernonia cinerea *Less.*
Hernandia peltata *Meissn.*
Macaranga tomentosa *Wight.*
Spinifex squarrosus *L.*

There are also a few local names given in Pyrard de Laval's vocabulary which have not been determined, and there are doubtless some more cultivated plants recorded in general works, marine surveys, &c.

The above list of eighty-seven species contains forty which may be considered as *wild* in the islands, *i. e.*, not due to importation intentionally or accidentally by man. They are for the most part the ordinary sea-shore plants of the Eastern Tropics, and the whole of them are to be found on the south coast of Ceylon. As many as fourteen attain the dimensions of shrubs or trees.

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† This grows also on the Chagos Is., south of the Maldives. Mr. Bell informs me that Lieut. Moresby says, "The Bois Mapou (the roose [= los] tree of the Maldives) grows to an immense size on all parts of the islands; the wood is soft and spongy." It is also recorded for one of the Laccadive Is. *P. macrophylla* Chois. is called "Bois Mapou" in the Seychelles (*Fl. Maur.* 263).

It will be of interest to compare the above list, very imperfect as it is, with that for the neighbouring group of coral islands, the Laccadives, of which Dr. Prain has given an exhaustive account in a valuable paper.* This group consists of sixteen or seventeen islands off the Malabar coast of Peninsular India, the most easterly of them being only 120 miles from it, and they are extended between 10° and 14° N. lat. Several of the islands are much larger than any of the Maldives, and appear to possess a richer and more varied flora. As many as 192 species of Phanerogams are included in Dr. Prain's list, of which 50 are cultivated, leaving 142 wild species. Yet it is remarkable that in the above list of 40 wild Maldive plants as many as 15 are not in this much more extensive Laccadive list; these are the following:—*Vitis Linnæi*, *Dolichos Lablab*, *Cassia auriculata*, *C. Sophera*, *Adenanthera pavonina*, *Sonneratia acida*, *Pemphis acidula*, *Oldenlandia umbellata*, *Jasminum* sp., *Justicia procumbens*, *Vitex Negundo*, *Nothosærva brachiata*, *Fimbristylis spathacea*, *Zoysia pungens*, *Macaranga tomentosa*. Of these, *Sonneratia*, *Pemphis*, *Oldenlandia*, *Fimbristylis*, and *Zoysia* are littoral plants, and the others, except *Vitis Linnæi*, mostly weeds or escapes from cultivation.

Minikoi I. is included politically with the Laccadives, but it is isolated in 8° 30′ N. lat., and is thus rather nearer the Maldives, and it has also a Maldive population. It is five miles long by half a mile broad. It has a rich flora, and no less than forty-five of the species included in the Laccadive list are recorded from it *only*. Of these, seventeen or eighteen are cultivated plants, and nine or ten of these are also cultivated in the Maldives; *Triphasia trifoliata* and *Terminalia Catappa* are, however, considered to be wild in Minikoi. It is probable that many of its plants have been imported directly from Ceylon, there having been much intercourse with Colombo, especially during the building of the great lighthouse. Some sixty species are given for Minikoi which are not as yet recorded for the Maldives, but many doubtless occur there, such as the littoral species *Suriana maritima*, *Canavalia obtusifolia*, *Sesuvium*, *Wedelia biflora* (*W. scandens* Clarke), *Ochrosia borbonica*, *Ipomœa biloba*, *Boerhaavia diffusa* (*B. repens*), and *Thuarea sarmentosa*, and many weeds of cultivation. The only Minikoi plant absent from Ceylon is *Canavalia turgida* (which is doubtfully a distinct species), with a wide range as a littoral plant in the Eastern Tropics.

SOME NEW BRITISH MARINE ALGÆ.

By E. A. L. Batters, B.A., LL.B., F.L.S.

In this Journal for 1895, pp. 274–276, I gave a list of the more important species of *Chlorophyceæ* and *Phæophyceæ* added to the British Marine Flora during the last twelve months; the present

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[*] *Journ. Bombay Nat. Hist. Soc.* v. and vi. (1892–3), reprinted in his 'Memoirs and Memoranda' (1894).

list therefore deals only with the recent additions to the *Myxophyceæ* and *Florideæ*. I am greatly indebted to M. Gomont, of Paris, for assistance with the *Myxophyceæ*, and owe the identification of the first six species recorded below to his kindness.

MYXOPHYCEÆ.

Lyngbya Agardhii Gomont, *Monogr. des Oscillariées*, p. 144. *Calothrix Agardhii* Crn. Liste des Alg. Mar. Finist. in *Bull. Soc. Bot. de France*, vii. p. 372. Margate, on *Polysiphonia nigrescens*, October, 1894, *W. Boyd, Esq.* Plymouth, Dec. 1895, *G. Brebner.* In the autumn of 1894 my friend Mr. W. Boyd was good enough to send me, in a fresh state, a quantity of sea-weed gathered at random on the shore at Margate, amongst which I was fortunate enough to find this interesting *Lyngbya.*

L. Meneghiniana Gom. in Morot, *Journal de Botanique*, iv. p. 354, 1890. Firth of Forth, opposite Caroline Park, August, 1887. This and the above-mentioned *L. Agardhii* are the only British representatives of the subgenus *Leibleinia*, composed of epiphytic species, in which the filaments are attached by the middle, both ends being erect. *L. gracilis* must, for the present at any rate, be deleted from the List of British Algæ, for M. Gomont informs me that *L. gracilis* of Holmes's *Algæ Britannicæ Rariores Exsiccatæ*, No. 165 (vide *Grevillea*, xxii. p. 51), is but a form of *Oscillatoria Corallinæ* Gom. The same fate must befall *L. confervoides*, the plant so called in *Grevillea*, l. c., being in M. Gomont's opinion a form of *L. semiplena.*

L. Rivulariarum Gom. *Monogr. des Oscill.* p. 168. Studland and Swanage, Sept. 1894. In the sheaths of *Microcoleus chthonoplastes*, rare, *E. A. B.*

Phormidium tenue Gom. *Monogr. des Oscill.* p. 189. Muddy estuary of the Tweed, Oct. 1883, *E. A. B.*

P. ambiguum Gom. *l. c.* p. 198. In deep rock pools near high-water mark, Farland Point, Cumbrae, August, 1891, *E. A. B.*

P. uncinatum Gom. in Morot, *Journal de Botanique*, iv. p. 355, 1890. Muddy estuary of the Tweed, July, 1884. Ballachulish, July, 1885, *Dr. Otto Nordstedt* (vide *Grevillea*, xxii. p. 52). I am uncertain whether Dr. Nordstedt's specimens were gathered in brackish or fresh water; there is, however, no doubt about my Berwick specimens.

P. corium Gom. in Morot, *Journ. de Bot.* iv. p. 355. Burnham, May, 1894, *T. H. Buffham.* In crevices of rocks near high-water mark. Swanage, Sept. 1894, *E. A. B.*

P. persicinum Gom. *Monogr.* p. 184. *Lyngbya persicina* Reinke, *Algenflora der West. Ostsee*, p. 91. On old Solen shells dredged from 6–8 fathoms, Cumbrae, August, 1891, *E. A. B.* Plymouth, Oct. 1895, *G. Brebner.*

FLORIDEÆ.

Erythrotrichia Boryana Berthold, *Bangiaceen*, p. 25. Eastbourne, June, 1889, *E. A. B.* My specimens of this species are narrower than in the typical form, usually being from 18 to 120 μ wide. There are from 1 to 6 or more cells in the width of the frond. In *E. investiens* there are never more than 2 cells in the width of the filament. From *Bangia ciliaris* it is easily distinguished by its monostromatic frond.

Colaconema, nov. gen. Thallus microscopic, consisting of rose-red, creeping, irregularly branched, jointed filaments, living in the cell-walls of various algæ. Filaments often anastomosing, sometimes loosely united laterally. Monosporangia formed from portions either of the terminal cells of the principal axes, or of short swollen 1- or few-celled lateral branches, or even from a portion of a cell in the continuity of the filament. The undifferentiated portions of the cells forming cup-like bases for the sporangia.

C. Bonnemaisoniæ, nov. sp. Filaments flexuous, much and irregularly branched, anastomosing so as to form an irregular network between the cortical cells of the host-plant. Cells very variable in shape, simple, furcate, cruciate or irregular, swollen here and there, varying in length from one to six or eight, or even more times longer than broad, usually 3–6 μ in diameter. Sporangia lateral, nearly globular, 9–12 μ in diameter, usually in clusters of from 2 to 6, cup-like base conspicuous, about one-third the size of the sporangium. Growing in the cell-wall of *Bonnemaisonia asparagoides*. Plymouth, Sept. 1895, *G. Brebner*. Berwick-on-Tweed, *E. A. B.*

C. Chylocladiæ, nov. sp. Filaments slender, straight or very slightly flexuous, subsimple or sparingly branched, two filaments sometimes united by one or more lateral branches; cells nearly cylindrical, very long, often eight to ten or twelve times longer than broad, 2·5–3 μ in diameter; sporangia terminal or lateral, oval, 6–8 μ long by 4–6 μ wide, cup-like base of sporangium not conspicuous. In the cell-wall of *Chylocladia ovalis*. Torquay, *E. A. B.* Plymouth, Sept. 1895, *G. Brebner.*

C.? reticulatum, nov. sp. Filaments much and irregularly branched, anastomosing so as to form a more or less regular network between the cells of the host-plant; owing to the very limited space in which they grow, the side branches are frequently so closely pressed against the principal branches that they appear to form one filament, composed of a double row of cells. Cells short, angular, about as long as broad or a little longer, 6–8 μ in breadth. Sporangia unknown. In the cell-wall of *Desmarestia Dudresnayi*. Moville, North Ireland, Oct. 1852, *comm. Dr. D. Robertson*. Plymouth, Oct. 1895, *G. Brebner*. Montagne describes and figures Callithamnoid filaments as part of his *Desmarestia Gayana* (vide Ch. Gay, *Histoire de Chile*, viii. p. 242, Atlas Pars. Crypt. tab. xiv. fig. 1), and it is far from improbable that the plant described above is related to the parasite mistaken by Montagne for part of the *Desmarestia*. I am indebted to Mr. George Brebner, who did such excellent algological work at Cumbrae in 1893, and is now with equal success investigating the Marine Algæ of Plymouth Sound, for beautiful specimens of *C. Bonnemaisoniæ* and *C. Chylocladiæ*, both species bearing monospores. The former, when I received it from Mr. Brebner, was quite new to me, although I afterwards found it plentifully on specimens of *Bonnemaisonia* gathered at Berwick several years previously. Had I not seen Mr. Brebner's specimens, I certainly should not have ventured to describe the genus *Colæonema*, which I have founded on the parasite on *Bonnemaisonia.*

Chantransia cæspitosa (*Callithamnion cæspitosum* J. Ag. *Spec. Alg.* xi. p. 18; Crn. *Alg. Finist.* 121). On *Codium tomentosum*, Fuci, &c. Swanage, April, 1899, *E. M. Holmes.* I have compared Mr. Holmes's specimens with No. 121 in his copy of Crouan's *Algues Marines du Finistère*, and find the two plants precisely similar. Prof. J. Agardh (*Analecta Algologica*, p. 48) thinks this may be the same as *C. corymbifera* Thur.; but Crouan's plant is a much larger, coarser plant, with filaments frequently 24 μ in diameter, of a quite different habit, and no trace of either antheridia or cystocarps. From *C. Daviesii* the present species may at once be distinguished by the pseudo-parenchymatous basal disc of that species being replaced by creeping filaments.

C. microscopica Foslie, *Contrib.* i. p. 54. On *Porphyra*, Berwick-on-Tweed, June, 1895, *E. A. B.* My specimens of this interesting little species, which is at once recognisable by its unicellular basal disc, bear both antheridia and cystocarps in addition to the monospores. The antheridia form very compact clusters at short intervals along the main axes and branches, the cystocarps are clustered near the basal disc, and are very large in proportion to the tiny plant that bears them.

C. mirabilis (*Callithamnion mirabile* J. Ag. *Spec. Alg.* ii. p. 15). On *Desmarestia aculeata*, Swanage, August, 1894, *E. A. B.*

Polysiphonia opaca Zan. *Syn.* p. 63; J. Ag. *Spec. Alg.* p. 1055. Mr. E. D. Marquand records this species from Guernsey (*Transactions* of the Guernsey Society of Natural Science, 1894), but I have had no opportunity of verifying the record.

Rhodochorton pallens Hauck, *Meeresalg.* p. 69. Seaton, Devonshire, July, 1895. I owe to the generosity of my friend Mr. T. H. Buffham, to whom I am indebted for many valuable specimens of our native algæ, and for still more valuable advice and criticism, a beautiful tetrasporic specimen of this interesting plant, which was gathered by his daughter at Seaton last July. The Devonshire specimen exactly agrees with Hauck's description and figures (*Oesterr. Bot. Zeitschrift*, 1878, p. 187, tab. ii. figs. 4–6).

Callithamnion lepadicola J. Ag. *Spec. Alg.* iii. p. 12. On limpet-shells, Swanage, August, 1894, *E. A. B.* My specimens of this plant agree well with the specimens in the British Museum copy of Welwitsch's *Phyc. Lusitan.* No. 23, on which the species is founded, but I must confess that the plant appears to be more nearly related to the *Bangiaceæ* than to the *Ceramieæ.* I believe I have seen specimens of this species from Guernsey, but I cannot be certain, as I now have no specimen from that locality.

Bonnemaisonia hamifera Hariot, Liste des Algues Marines rapportés de Yokaska (Japon), par M. le Dr. Savatier, in *Mém. de la Soc. Nat. des Sc. Nat. &c. de Cherbourg*, xxvii. 1891, p. 223. Mr. Buffham exhibited a specimen of this very interesting alga, which he had found at Falmouth, at the meeting of the Linnean Society on Nov. 21st, 1895.

Trailliella, nov. gen. Fronds composed of monosiphonous, branching, jointed filaments. Primary filaments procumbent, attached to the substratum by disc-shaped cells. Secondary filaments arising from the primary filaments, erect, branching. Tetraspores immersed, formed from a portion of the cell-contents of cells in the continuity of the frond, irregularly cruciate; cystocarps and antheridia unknown. The tetraspores are formed in an analogous manner to the monospores of *Rhodochate* (*vide* Bornet, *Les Algues de P. K. A. Schousboe*, p. 361). The cell in which a tetraspore is formed swells, and its cellular contents divide longitudinally into two parts of unequal size, the larger of the two parts becomes darker in colour, more opaque and granular, and at the same time increases in size until finally it fills almost the entire cell, when it divides into two parts by a transverse division, and ultimately forms an irregularly cruciate tetraspore. The systematic position of the genus must of course remain doubtful so long as the cystocarps are unknown, but in the meantime the genus may be placed next to *Spermothamnion.*

Trailliella intricata, nov. sp. Fronds forming dense, rose-red or brownish-red tufts. Primary filaments 30–40 μ thick, irregularly branching, attached by disc-shaped cells. Secondary filaments erect, ½–1½ in. high, and of nearly equal diameter (30–45 μ) throughout, simple or branching, more or less naked below, pinnate above, with alternate or subsecund spreading branches of almost the same diameter as those from which they arise, tapering at the apex to about 20 μ. Cells of both the primary and secondary filaments 1½–2½ times longer than broad, more or less swollen in the middle; in most of the cells one of the upper corners is occupied by a small roundish or triangular refractive colourless body 12–15 μ in diameter, which is probably analogous to the refractive bodies so often found in species of *Antithamnion.* Tetraspores immersed in the swollen cells of the secondary filaments, 50–60 μ in diameter, solitary or 3–6 together, formed from successive cells of the filament, separated from the apex of the filament by from 3 to 15 unchanged cells. Plymouth, October, 1895, *G. Brebner.* Studland, Sept. 1890, *E. M. Holmes;* Sept. 1895, *E. A. B.*

This very interesting species has long been known in a barren condition, and is the *Spermothamnion Turneri* f. *intricata* of Mr. Holmes's and my Revised List, and I have every reason for believing that it is *S. intricatum* J. Ag. It was reserved for Mr. Brebner, however, to discover the tetraspores, which are placed quite differently from those of any other member of the *Ceramieæ* known to me, thus necessitating the removal of this plant to a new genus; and I have seized the opportunity to connect the name of my friend Mr. G. W. Traill, the well-known algologist of Edinburgh, with the British Marine Flora for which he has done so much. I must here express my regret that Mr. Brebner has not seen his way to allow any of the new genera discovered by him to bear his name. If Mr. Brebner goes on as he has commenced at Plymouth, however, it seems likely that many more opportunities may arise of connecting his name with the sea-weeds of Britain.

In his recent *Analecta Algologica;* Continuatio, ii., Prof. J. G. Agardh, besides raising the varieties *vimineum*, *corymbosum*, and *botryocarpum* of *Ceramium rubrum* to specific rank, records three new *Ceramia*, i. e., *C. Crouanianum*, *C. fruticulosum*, and *C. arborescens* from Britain. As the specimens were in most cases sent to Prof. Agardh by Mrs. Griffiths, we presume the new species were found on the coast of Devonshire or Cornwall.

Rhododiscus pulcherrimus Crn. *Ann. Sc. Nat.* 4th ser. xii. pl. xxii. figs. 29–33. On an old Solen shell, Plymouth, Oct. 1895. I was fortunate enough to find a specimen, now in the Herbarium of the British Museum, of this most interesting plant when examining some old Solen shells from Plymouth Sound, which Mr. George Brebner had sent to me to examine for perforating algæ. I trust that before long Mr. Brebner will be able to send me some more specimens of this plant, which perhaps, when specially sought for, may not be so rare as is generally supposed.

Peyssonnelia Rosenvingii Schmitz, in Rosenv. *Groenlands Havalger*, p. 782. Near low-water mark, Berwick-on-Tweed, February, 1888. From an examination of the figure and description of this species it appeared to me so probable that this species might be mistaken for *P. Harveyana* that I re-examined all my specimens so named, with the result that I actually found one or two specimens of *P. Rosenvingii* amongst them.

P. rubra J. Ag. *Spec. Alg.* ii. p. 502; iii. 386. Birturbui Bay, on the Scallop Bank, August, 1846, *William McCalla & Prof. W. H. Harvey.* Harvey's figure and description of *Peyssonnelia* (*Cruoriella*) *Dubyi* in *Phycologia Britannica* always appeared to me so different from that given by the brothers Crouan of their plant, that I was doubtful whether both authors referred to the same species. Through the kindness of Prof. E. P. Wright, I have been enabled to examine Harvey's original specimens, and I have no hesitation in saying that all his Birturbui Bay specimens are referable to *P. rubra*. The specimens in the collections presented to Kew and the Linnean Society by Prof. Harvey are also referable to *P. rubra*. Although there are no specimens from the West of Scotland in any of the collections which belonged to Harvey, I have no doubt that the specimens from that locality mentioned by him in *Phyc. Brit.* are referable to *Cruoriella Dubyi*, a species which is by no means uncommon at Cumbrae and elsewhere on the west coast.

P. atropurpurea Crn. *Alg. Mar. Finist.* 23; *Florule du Finistère*, p. 148. Penzance, August, 1889, *A. H. Teague.*

Cruoria rosea Crn. *Fl. Finist.* 147. Plymouth, Nov. 26, 1895. Simultaneously detected by Mr. Brebner and myself on old shells dredged from "The Queen's Ground," Plymouth Bay.

In conclusion, I may say that Mr. Brebner purposes to publish shortly figures of the species of *Colaconema* and *Traillïella*, and that Mr. Buffham similarly purposes to publish a description and figure of *Bonnemaisonia hamifera*.

TERATOLOGICAL OBSERVATIONS ON PARNASSIA PALUSTRIS L.

By I. H. Burkill, M.A.

Owing to the great interest which attaches to *Parnassia*, I have been led to examine during the past two summers a considerable number of flowers obtained from the cliffs of the Yorkshire coast near Scarborough. Here the soil is a heavy boulder clay, and the situation in many parts somewhat sunless and exposed to cold winds from the sea. I have further examined all the flowers which I could obtain (under 200) on a peaty soil in Glen Clova and Glen Prosen, Forfarshire, at elevations between 700 and 1300 ft. above sea-level. In this short paper I propose to confine myself to statements relating to the variability of the flowers of this plant. The following table sets forth the number of flowers observed, with the variation in the number of parts in the individual whorls :—

No. of Cases.	Type of Flower.					
	Sepals.	Petals.	Stamens.	Staminodes.	Carpels.	
9	4	4	4	4	3	Simple Changes.
4	4	4	4	4	4	
201	5	5	5	5	3	
Approximately 4700 Normal Flower.	*5*	*5*	*5*	*5*	*4*	
224	5	5	5	5	5	
25	5	5	5	5	6	
1	6	6	6	6	3	
3	6	6	6	6	4	
14	6	6	6	6	5	
1	6	6	6	6	6	
1 *c*	4	4	5	4	3	Complicated Changes.
1 *c*	4	4	5	4	4	
1*	5	4	4	4	4	
1* *c*	6	5	7	5	6	
1*	6	6	5	5	4	
1	5	3	3	3	4	

Now, disregarding for the present the abnormalities of the last six types, about which further remarks are necessary, we notice at once that, whatever may be the number of organs in the outer whorls of the flower, the gynœcium has a tendency to produce one unit less. We may tabulate this thus :—

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c Chorisis of one stamen.

* Change in symmetry of flower between calyx and other whorls

No. of Carpels.	3	4	5	6
Percentage of 4-merous flowers with	66·6	33·3	—	—
,, 5-merous ,,	3·9	*91·3*	4·3	0·5
,, 6-merous ,,	5·2	15·8	73·7	5·2

Then 66·6 % of the 4-merous flowers had three carpels; approximately 91·3 % of the 5-merous flowers had four carpels, *i.e.*, were normal; and 73·7 % of the 6-merous flowers had five carpels. Too much stress, however, must not be laid upon such too-slender figures.

Abnormal flowers of *P. palustris* were noticed on the Continent more than half a century ago. Flowers with five carpels were first recorded by A. and L. Bravais,[*] and are again mentioned by Louis Bravais[†] as occurring rarely; while Wydler, in his first paper[‡] on the subject, records finding a flower with three carpels. So here are both the commonest abnormalities known before the year 1850.

Roeper, in a paper entitled 'Abnorme Normalgestaltungen,'[§] says that, in searching over more than a thousand flowers, he found two specimens with five carpels. Seemann, dealing with the botany of Alaska,[||] states that, "nearly one-half of the specimens collected in Western Eskimaux-land had five stigmas, and a capsule of five valves." It will be noticed at once that, as far as Seemann's and Roeper's statements extend, there seems to be a great difference in the amount of variation found in these two regions—Central Europe and Alaska; in the former, two abnormal flowers in over a thousand; in the latter, "nearly one-half of the flowers."

Roeper's experiences are by no means unsupported. Wydler has published two other papers,[¶] in which he describes abnormal forms of *P. palustris*. These abnormalities number, adding those of both papers together, fifteen flowers with three carpels, one being 4-merous, six flowers with five carpels, and one flower with six carpels; and though he gives no clue to the percentage of varying flowers, his words seem to indicate that it was but small. Buchenau[**] records flowers (one of each) with the following formulæ:—$K_4C_4A_{4+4}G_3$, $K_6C_6A_{6+6}G_3$, and G_4, and G_5, and also two flowers $K_5C_5A_{5+5}G_5$.

Kirschleger[††] says, "On rencontre, mais rarement, des ovaires à 3 ou 5 placentaires et stigmates;" and Wettstein[‡‡] speaks of

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[*] 'Essai sur la disposition générale des feuilles rectisériées,' *Ann. des Sc. Nat.* 2nd ser. xii. p. 39, 1839.

[†] 'Examen organographique des Nectaires,' *Id.* xviii. p. 164, 1842.

[‡] 'Morphologische Beiträge,' *Flora*, 1844, p. 751.

[§] *Bot. Zeitung*, 1852, x. p. 187.

[||] *Botany of the Voyage of H.M.S.* '*Herald.*' London, 1852–1857, p. 25.

[¶] 'Morphologische Mittheilungen,' *Flora*, 1857, p. 18; and 'Kleinere Beiträge zur Kenntniss einheimische Gewächse,' *Flora*, 1860, p. 395.

[**] 'Einige Blüthenabnormitäten,' *Flora*, 1857, p. 291.

[††] *Flore d'Alsace*, Strasbourg, 1857, ii. p. 425.

[‡‡] 'Zur Morphologie d Staminodien v. *Parnassia palustris*,' *Berichte d. Deutsch. Bot. Gesellschaft*, viii. p. 304, 1890.

"investigating numberless *Parnassia*-flowers," and finding ten abnormal "among many normal" blossoms. These last investigations were made in the Tyrol.*

Then consider the statements of these authors in connection with the table of abnormalities given above for Scarborough and the Grampians. There are two points to which I wish to call attention: (1) that the variation in these different places—Alaska, Britain, and Continental Europe—runs on the same lines, everywhere the ovary being the most variable organ; and (2) that, in want of fuller statistics, it *appears* as if *P. palustris* is very variable in Alaska (nearly 50 %), much less so in Britain (9 %), and still less variable on the Continent.

Let us turn to the other abnormalities. Firstly, there were six flowers given at the base of the first table, which need fuller explanations. Of these, three (marked with an asterisk, and not included in the second table) are intermediate in symmetry between two types, having more members in the calyx than in some of the other whorls between it and the ovary. Three of the six flowers (*c*) exhibited a chorisis of one stamen; and one had two petals, two stamens, and two staminodes aborted on the late-developing side of the flower.

Other abnormalities were observed as follows:—

1 flower.—Phyllody of the first sepal.
1 flower.—Sepalody of a petal, the staminode above it being aborted.
1 flower.—Petalody of a sepal and two stamens.
3 flowers.—The ovary, incompletely closed, bearing on one side an extra anther, or in one case two anthers.
1 flower.—Adhesion of a sepal and petal.
1 flower.—Adhesion of a petal and stamen.
2 flowers.—Adhesion of a stamen to outside of ovary.
1 flower.—Cohesion of three stamens, accompanied by complete disappearance of three staminodes, two being those alternating with the fused stamens, the other having disappeared from the opposite side of the flower; the two remaining staminodes, those before first and fifth petals, were much reduced.
1 flower.—One sepal, two petals, one stamen being represented by a lump attached to outside of ovary.
1 flower.—Five carpels present, of which three were fused together into a perfect but flattened ovary, while the other two were lying free against the most flattened side of it.†
1 flower.—Complete abortion of ovary.

Many flowers were found in which the carpels were incompletely fused together, and others in which the stigmas left a small opening between them. Ovaries, with such a canal at the top, Linnæus,* Delarbre,† Withering,‡ and Wydler § have noticed; these I hope to discuss in a second paper.

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* In various floras the possibility of flowers occurring with three or five carpels is noted; among the authors of these may be mentioned Wimmer, Godet, Grenier, and J. A. Schmidt.

† Buchenau describes and figures an almost identical case; in his flower, however, there were two complete ovaries—one with three and the other with two placentæ. 'Einige Beobachtungen aus d. Gebiete d. Pflanzen-Teratologie,' *Bot. Zeitung*, 1862, xx. p. 307.

We may sum up the abnormalities as follows:—

36 flowers abnormal in number of sepals.
37 ,, ,, ,, ,, petals.
35 ,, ,, ,, ,, stamens.
38 ,, ,, ,, ,, staminodes.
479 ,, ,, ,, ,, carpels.
6 ,, exhibiting abnormal metamorphoses.
7 ,, ,, ,, forms of cohesion and adhesion.

I wish particularly to lay stress upon the great variability of the ovary, and will add here that flowers on the same root were observed to possess three and four carpels, or four and five carpels; and that among the few flowers examined above 700 ft. in the Grampians, I find the same free variability—both increase and decrease in the number of parts—as at Scarborough.

PENTASACHME Wall. AND SPILADOCORYS Ridl.

By R. Schlechter.

The genus *Pentasachme* (or, as spelt by Bentham in the *Genera Plantarum*, vol. ii. p. 769, *Pentasacme*) was founded by Wallich in 1834, and published by Wight in his *Contributions to the Botany of India*, p. 60, where two species, *P. Wallichii* Wight and *P. caudata* Wall., are described. The former was figured in one of the wonderfully executed plates of Riocreux in Delessert's *Icones Selectæ* (v. t. 87). In 1843 Decaisne, when writing his Monograph of the Asclepiads for DC. *Prodromus*, accepted the genus, and gave descriptions of the two species (p. 627), but unfortunately added two more from China, which, as neither of the type-specimens had flowers, will most likely always remain doubtful. Ten years later Bentham published in Hooker's *Kew Journ. Bot.* v. 54, another species, *P. Championi*, which had been collected by Champion in Hong Kong. The distinctions, however, between his plant and *P. caudata* were so slight that the learned author himself suggested the possibility of its being only a variety of the latter, and repeated the same suspicion in describing the plant in the *Flora Hongkongensis*.

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* *Amoenitates Academicæ*, vi., Leyden, 1764, p. 301.

† *Flore de la ci-devant Auvergne*, 2nd ed., Riom, 1800, i. p. 293. The account of the pollination given here is interesting, because it ignores so markedly C. K. Sprengel's more correct account in his *Entdeckte Geheimniss d. Natur, in Bau u in Befruchtung d. Blumen.*

‡ *Botanical Arrangement of British Plants*, 2nd. ed., 1787, Birmingham, i. p. 325.

§ 'Morphologische Beiträge,' *loc. cit.*

When looking through some Asclepiads in the Herbarium of the British Museum, I came across a plant on which Mr. Ridley had recently founded a new genus, *Spiladocorys*. It struck me at once as being very like *Pentasachme*. This induced me to compare the species of the latter genus more closely, and after careful examination of several flowers I came to the conclusion that not only Ridley's plant but also *P. Championi* Benth. could not be kept distinct from *P. caudata* Wall. *P. Championi* has, with the exception of its less elongated leaf-tips, no character which would justify its specific separation from *P. caudata*, a plant which, in regard to the form of the corona-scales, seems somewhat variable, as I have noticed some of them with more or less crenulate tips, as well as others which were more deeply toothed.

As the two Chinese species published by Decaisne from imperfect material came from a region that is now pretty well explored, it seems probable that both will either prove identical with the plant (*P. Championi*) described by Bentham from the same region, or will not belong to *Pentasachme* at all. We should thus have the genus reduced again to its two original species, with the following synonymy:—

Pentasachme Wallichii Wight, *Contrib. to Bot. Ind.* (1853), 60; Delessert, *Ic. Select.* v. (1846), t. 87; Dcne. in DC. *Prod.* viii. (1843), 627; Hook. f. *Fl. Br. Ind.* iv. (1885), 28.

Pentasachme caudata Wall. ex Wight, *l.c.* (1834), 60; Dcne. *l.c.* (1843), 627; Hook. f. *l.c.* (1885), 28. *P. Championi* Benth. in Hook. *Kew Journ. Bot.* v. 64 (1853); *Fl. Hongkong.* 228 (1861); Hemsl. in *Journ. Linn. Soc. Bot.* xxvi. 112 (1889); Maxim. *Mél. Biol.* ix. 811. *Spiladocorys angustifolia* Ridl. in *Trans. Linn. Soc. Bot.* ser. 2, iii. (1893), 322, t. 63.

CONTRIBUTIONS TO THE FLORA OF SOUTH AFRICA.

By Harry Bolus, F.L.S.

II.

Heliophila namaquana, n. sp.—Herba annua glabra, ½–1 pedalis; caulis e basi patenti-ramosus paucifoliatus pallidus; folia sparsa linearia, 1·5–2·3 cm. longa; racemi laxiflori, fructiferi ad 15 cm. longi, pedicellis gracilibus, 4–5 mill. longis; flores inter minores, circa 4 mill. longi, sepalis linearibus, petalis obovatis obtusis, filamentis omnibus basi muticis; siliquæ patenti-adscendentes lineares, interdum subtorulosæ 1-nervæ, cum pedicello et stylo ad 3·5 cm. longæ, 1–1·5 mill. latæ; stylus clavato-oblongus obtusissimus, in spec. fructiferis ad 4–5 mill. longus; semina ovalia exalata subnigra.

Hab: Cape Colony, district of Little Namaqualand, at Naries, on the mts. between Spektakel and Ookiep, alt. about 1075 meters, fl. Sept., *Bolus* (No. 6517); *Herb. Norm. Austr-Afr.* (No. 485).

From the description, this seems to come near to *H. divaricata*, Herb. Banks, which I have never seen, and which was founded on a plant of Masson's, collected about 1775, but without pods.

Xylosma Flanagani, n. sp. — Arbuscula glabra inermis, ramulis dense foliatis; folia imbricantia, brevissime petiolata lanceolata subacuta, basi subcuneata, serrulata coriacea, utrinque reticulato-venosa, supra lævia quasi vernicata, 2–2·5 cm. longa, 6–12 mill. lata; flores hermaphroditi, vel interdum polygami, in axillis solitarii vel rarius fasciculati, brevissime pedicellati; sepala 5, abbreviata rotundata ciliata; stamina 10–20, annulo glanduloso cincta; ovarium cylindricum 2-ovulatum, stylo cylindrico valido subæquilongo, stigmate obscure 2–3-lobato; bacca ovalis, cum pedicello accreto et stylo persistente (an matura?) 1·2 cm. longa.

Hab: Cape Colony, South-eastern Region, near Komgha, in woods, alt. about 600 meters, fl. March, *H. G. Flanagan* (No. 682).

Very different-looking from *X. monospora* Harv., hitherto our only known species, by its much smaller leaves and its apparently constantly biovulate ovary.

Muraltia Flanagani, n. sp. — Fruticulus ramosus glaber; rami divaricati, 10–20 cm. longi, inferne pulvinulis foliorum delapsorum vestiti, ultimi foliosi subangulati, minute verrucosuli; folia e pulvinula persistente brevissime petiolata oblonga obtusa, subtus 1-nerva, rigida, marginibus scabridis sæpius reflexis, adscendentia vel squarrosa, 3–5 mill. longa; flores pedicellati, pedicellis 2 mill. longis; sepala elliptica vel oblonga, lateralibus multo majoribus scariosis obtusissimis, 3 mill. longis; petala oblonga obtusissima unguiculata, carina 5 mill. longa paullo breviora; ovarium glabrum muticum.

Hab: Orange Free State, summit of the "Mont aux Sources," alt. about 2950 meters, fl. Dec.–Jan., *H. G. Flanagan* (No. 2020).

Flowers pink. Allied to *M. crassifolia*, Harv., from which it differs by its oblong blunter and thinner leaves, and its shorter broader and blunter petals; also to *M. rigida*, E. Mey., from which it is distinguished by the cushions below the leaves, and by its shorter very obtuse and broader petals; the leaves much resemble those of the latter species.

Melianthus villosus, n. sp. — Suffrutex robustus erectus ramosus undique plus minus villosus, pilis aliis rectis stellatim fasciculatis aliis mollibus laxe curvis sæpe intermixtis vestitus; stipulæ liberæ lanceolatæ acuminatæ, 1·6 cm. longæ; folia breviter petiolata, 20–27 cm. longa, rachide sursum alata, foliolis 4–8 ovato-lanceolatis acutis, grosse dentatis, subtus villosis superne pilis stelloideis tenuiter vestitis, 5–10 cm. longis, 2–4 cm. latis; racemi terminales stricti erecti multiflori, 30–40 cm. longi, pedunculo valido purpureo; flores sparsi vel subverticillati, pedicellis gracilibus 1·7 cm. longis, bracteis lanceolatis acuminatis subæquilongis; calycis segmenta posteriora elliptica, 2·6 cm. longa, lateralia lineari-falcata, anticum e basi lata gibbosa subito angustatum subulatum 1·5 cm. longum; petala 4, linearia decurva purpurea dorso villosa, apice foliaceo utroque villoso, 1·7 cm. longa; ovarium oblongum, loculis 4 ovulatis.

Hab: South-eastern Region; Natal: Weenen County, South Downs, on a rocky hill, alt. 1200–1500 met., fl. Dec., *J. M. Wood* (No. 4376), Orange Free State: Eland's River valley, near the Mont aux Sources, alt. about 1850 met., fl. Dec.–Jan., *H. G. Flanagan* (No. 2004).

In habit and general appearance like *M. major*, Linn., but somewhat smaller, and not glaucous, but everywhere more or less hairy; besides some floral differences.

Buchenroedera biflora, n. sp.—Fruticulus erectus ramosus pubescens, ramis adscendentibus foliosis, ad 33 cm. longis; stipulæ lanceolatæ acuminatæ, petiolis 5–6 mill. longis subæquilongæ; foliola oblanceolata obtusa mucronata 1-nerva sericeo-pubescentia viridescentia, 0·9–1·1 cm. longa; pedunculi axillares, racemose biflori, graciles, 1·3–1·5 cm. longi, fructiferi 2·4 cm. longi, pedicellis 2–3 mill. longis bractea lineari æquilonga; calyx turbinatus sericeus, obscure 10-nervus, 8 mill. longus, segmentis anguste subulatis acuminatis tubo brevioribus; vexillum suborbiculare unguiculatum sericeum, 1·1 cm. longum, alis oblongis auriculatis æquilongis, carina obtusa auriculata ceteris paullo longior; legumen compressum lineari-oblongum pubescens, calyce triente longius.

Hab: South-eastern Region; Zululand, Entumeni, alt. 460 met.?, fl. April, *J. M. Wood* (No. 3988).

Flowers purple. Greener and less silky than most of the genus, and distinct by its inflorescence. The widely separated middle lobe, with the closely set lateral pairs of the lobes of the calyx, bring this plant near to *Lotononis.* But the habit is rather that of *Buchenroedera.*

Lotononis procumbens, n. sp.—Suffruticosa procumbens, undique plus minus villosa; rami patentes foliati, 10–18 cm. longi; stipulæ solitariæ foliaceæ obovatæ vel lanceolatæ acutæ, petiolis 4–6 mill. longis æquilongæ vel parum breviores; foliola oblanceolata obtusa, subtus 1-nerva, tenuiter pubescentia, intermedio 0·6–1·4 cm. longo; pedunculi terminales, 1–3 cm. longi; flores sæpius capitati, rarius subracemosi; capitula hemisphærica dense 8–15-flora, 2–2·5 cm. diametro; bracteæ capitula involucrantes, e basi lata obovatæ acutæ, 3–4 mill. longæ; bracteolæ 2, lineares; flores sericeo-villosi, 1·2 cm. longi; calyx turbinatus, 7–8 mill. longus, segmentis tubo brevioribus, lateralibus falcatis patentibus, intermedio paullo longiori; vexilli limbus oblanceolatus acutus, basi minute bi-auriculatus, ungui longo filiformi; alæ basi auriculatæ vexillo æquilongæ; carina latior, 1·0–1·2 cm. longa, vexillum carinamque superans obtusissima, basi auriculata; ovarium lineare, deorsum glabrum, apice tanto villosum; legumen ignotum.

Hab: Orange Free State, lofty plateaux and mountains at Bester's Vlei, distr. Harrismith, alt. 1650–1950 meters, fl. Dec.–Jan., *Bolus* (No. 8139).

Belongs to Harvey's section *Polylobium*, and may be placed next

to *L. debilis*, Benth. Well characterised by its long carina and narrow long-clawed acute vexillum. The flowers are yellow, the apex of the carina reddish.

Lotononis grandifolia, n. sp. — Procumbens ? ; rami subsimplices vel parce ramosi foliosi pubescentes nodis genuflexi, 16–19 cm. longi ; stipulæ cordatæ acuminatæ, sæpius reflexæ, petiolis 5 mill. longis subæquilongæ ; foliolæ 3 obovata acuta mucronata undique pubescentia, minute reticulato-venosa, intermedio 2·8–4·4 cm. longo, 1–3 cm. lato, lateralibus minoribus ; spica terminalis, laxe 8-15-fl., 6–9 cm. longa ; flores patentes, 1·3–1·5 cm. longi ; bracteæ minutæ ; calyx obconicus sericeo-villosus, 1·1–1·3 cm. longus, segmentis subulatis acuminatis, intermedio tubo longiori, lateralibus tubo brevioribus ; vexillum ellipticum concavum, basi breviter cuneato-unguiculatum, apice tenuiter villosum, 1·7 cm. longum, alæ subspathulatæ æquilongæ, carina lineari-lanceolata subacuta recta, 1·4 cm. longa ; ovarium lineare pubescens (legumina haud suppetunt).

Hab : Natal, grassy hill, Van Reenen's Pass, Drakensberg Mts., alt. 1600–1850 met., fl. Dec., *J. M. Wood* (No. 5152).

"Flowers purple." Noticeable in the genus by its large leaves. The two lateral calyx-segments (which are actually longer, from the base, than the intermediate) are connate for about two-thirds of their length. There are three branches laid down in the Cape Govt. Herb., and the habit appears to be procumbent, but I cannot be certain.

Lotononis Woodii, n. sp. — Fruticulus procumbens subcæspitosus, totus, corollis exceptis, albo-sericeus ; rami patentes foliosi, ad 22 cm. longi ; folia 3-foliolata, foliolis obovatis acutis 1-nervis crassiusculis subrigidis, 4–9 mill. longis, stipulis lineari-subulatis sæpe recurvis petiolis 2–3 mill. longis æquilongis vel brevioribus ; flores 2–3, ad apices ramulorum umbellati, 7–8 mill. longi, pedicellis 5–6 mill. longis ; calyx obconicus, 6 mill. longus ; vexillum obovatum, basi cuneatum, ungui concavo brevi ; alis oblongis auriculatis carina rostrata acuta auriculata subæquilongis ; legumen immaturum turgidum oblongum sericeum.

Hab : South-eastern Region ; Natal : Amawahqua Mt., alt. 1900–2200 met., fl. April, *J. M. Wood* (No. 4603).

By its very acute carina, resembling that of a *Crotalaria*, this seems to belong to Harvey's section *Oxydium ;* I should place it next to *L. trichopoda*, Benth. in the *Flor. Cap.* The flowers are very like those of *L. micrantha* (Thunb.), Harv., not of E. & Z. But the habit is very different, and the inflorescence has no peduncle, as in that and most of this section. The leaves on the older branches are very much smaller than those on the younger ; all are somewhat shiny.

Aspalathus Bodkini, n. sp. (§ Sericeæ).—Fruticulus prostratus ramosus subcæspitosus ; rami rigidi spithamæi, ad 6 mill. diametro, ramulis divaricatis intricatis, sursum dense foliosis sericeis demum glabrescentibus, deorsum nudis cicatricibus pulvinulorum dense vestitis ; folia terna obovata acuta albo-sericea

nitentia, dense imbricata, 2–2·5 mill. longa; flores terminales sessiles, 6 mill. longi, extus plus minus sericeo-nitentes; calyx campanulatus, 3 mill. longus, laciniis oblongis obovatisve acutis approximatis, tubo subæquilongis; vexillum obovatum, alæ oblongæ, carina obtusa, omnibus inter se subæquilongis, gracillime unguiculatis; ovarium oblique lanceolatum sericeum, 2-ovulatum.

Hab: Cape Colony, South-western Region, on the rocky ridges of the Skurfdebergen near the Gydouw, alt. about 1650 met., fl. Dec., *Prof. A. Bodkin* (No. 7574 of my herb.).

Flowers yellow. A tufted stunted rigid plant, evidently growing between rocks in a bleak situation. A little like *A. argyrella*, MacOw., but with leaves much smaller, more closely white-silky, and shining, and with a very different calyx. Like that, it has more resemblance to a *Lotononis* than an *Aspalathus*. Very distinct in the section.

Aspalathus Gerrardi, n. sp. (§ Laterales).—Rami validi virgati dense foliosi, 25–30 cm. longi, cum foliis dense villosi; folia dense fasciculata linearia gracilia erecto-patentia 0·9–1·2 cm. longa; flores solitarii laterales sessiles, circa 6 mill. longi; calyx obconicus villosus, segmentis linearibus falcato-patentibus tubo longioribus, corollæ subæquilongis; vexillum suborbiculare unguiculatum, dorso sericeum, carina majuscula glabra vix longius; alæ carina angustiores brevioresque; ovarium oblique triangulare dense villosum, 2-ovulatum.

Hab: South-eastern Region; Natal: near Murchison, Alfred County, alt. about 600 meters, fl. May, *J. M. Wood* (No. 3023); also Natal, *Gerrard* (No. 1852), *fide N. E. Brown*.

Allied to *A. eriophylla*, Walp., and much resembling it, but the leaves and flowers are much smaller, the former less silky, the calyx-segments much longer proportionately to the tube, and the vexillum not oboval, but nearly orbicular.

Aspalathus læta, n. sp. (§ Carnosæ).—Fruticulus subprostratus dense ramosus, ramis ramulisque rigidis tomentosis, dense foliatis, ad 10 cm. longis; folia fasciculata linearia longe pungenti-acuminata glabrescentia, 3–7 mill. longa; flores 1–2, terminales sessiles; calycis tubus obconicus sericeo-pilosus, segmentis duobus superioribus lanceolatis inferioribus subulatis, longe pungenti-acuminatis, tubo vix 1½-plo longioribus, totus 7 mill. longus; vexillum ovatum subcarnosum, dorso sericeum, 1 cm. longum, alæ oblongæ glabræ carina æquilongæ, carina incurva obtusissima vexillo paullo brevior; ovarium lineare glabrum, margine ventrali barbata, 2-ovulatum.

Hab: South-western Region; Cape Colony: on the rocky ridges of the Skurfdebergen Mts., near the Gydouw, alt. about 1660 met., fl. Dec., coll. *A. Bodkin* (No. 7573 of herb. Bolus).

A densely-tufted rigid little plant. The flowers are like those of some forms of *A. arida*, E. Mey., and the species is no doubt allied to that, but is distinct by its very taper-pointed pungent leaves and calyx-segments; the branches also are not spinous. The prevailing colour of the flowers is bright yellow, the back of the vexillum and the upper part of the carina reddish-purple.

Aspalathus desertorum, n. sp. (§ Terminales). — Fruticulus humilis ramosissimus; rami divaricati rigidi pubescenti-hirti; folia e pulvinulis breviter spiniferis fasciculata subteretia incurva pubescentia demum glabrescentia, 2–3 mill. longa; flores terminales mediocres, 1 cm. longi, 2–3 ad apices ramulorum, pedunculis 2–3 mill. longis; bracteæ 2-lineares sub calyce approximatæ; calyx turbinatus fusco-tomentosus, laciniis subulatis glabrescentibus tubo brevioribus; vexillum suborbiculare dorso fusco-sericeum, alæ oblongæ vexillo breviores, carina incurva subfalcata vexillo æquilonga; ovarium oblique ovato-lanceolatum, pilis rectis sericeis vestitum, 6-ovulatum.

Hab: Cape Colony, in dry karroid places at Hottentot's Kloof, between Ceres and Karoo Poort, alt. about 600 meters, fl. Oct., *Bolus* (No. 2608).

A stunted scrubby bush with a general ashy hue. The flowers are somewhat like those of *A. laricifolia* or *A. canescens*; the tube of the calyx about 1½ times the length of the segments; most distinct in the section by its 6-ovuled ovary.

Aspalathus Simii, n. sp. (§ Terminales ?).—Fruticulus erectus ramosus pedalis vel ultra; rami adscendentes cano-tomentosi; folia e pulvinulis prominulis tomentosis fasciculata lineari-teretia mucronata subpungentia pubescentia, demum glabrescentia, patentia, ad 4 mill. longa; flores terminales 3–5, sæpius 3, vel rarius subracemosi, circa 6 mill. longi, pedicellis cano-pubescentibus 2 mill. longis; calyx campanulatus pubescens, 3·5 mill. longus, lobis subulatis tubo 2–3-plo brevioribus, sinubus latis rotundatis; vexillum ovatum subacutum, basi intus minute sericeum, alæ oblongæ vexillo breviores, carina obtusa leviter incurva, vexillo subæquilongo; ovarium lanceolato-subulatum, basi sericeum, 2-ovulatum.

Hab: South-eastern Region; Cape Colony: Mount Coke, Kaffraria, alt. 600 meters, fl. Nov., *T. R. Sim* (No. 1428).

This has the appearance and habit of *A. costulata* Benth., § *Pingues.* But the yellow flowers, which are numerous at the end of short lateral branchlets, are much smaller, and the tips of the alæ appear to be spreading, and of a paler colour than the rest of the flower. It seems a doubtful member of the section *Terminales*, but I do not know where else to place it.

Aspalathus latifolia, n. sp. (§ Pedunculares). — Fruticulus diffusus ramosus, 3–4-pedalis, inter frutices suffultus, totus, corollis exceptis, pilis longis mollibus vestitus; rami divaricati foliosi; folia 3na verticillata lanceolata vel ovato-lanceolata, longe acuminata, calloso-ciliata 3–5-nerva glanduloso-vittata undulata tortaque, 1–2 cm. longa, 3–7 mill. lata; flores laterales in pedunculis gracilibus 1-floris, 1–3 cm. longis, foliis sæpius 1½–2-plo longioribus, bracteis sub flore approximatis foliaceis linearibus acuminatis 10–12 mill. longis; calycis tubus obconicus, 3 mill. longus, segmentis linearibus acuminatissimis falcato-incurvis tubo 3–4 plo longioribus; vexillum suborbiculare dorso dense albo-sericeum, circa 1·3 cm.

diam.; alæ oblongæ obtusissimæ glabræ, vexillo duplo breviores; carina incurva, alis vix longior; ovarium oblique lanceolatum pilosum 6-ovulatum; legumen (an maturum?), 2·5 cm. longum.

HAB: South-western Region; Cape Colony: on the mountain near the village of Piquetberg, alt. 250 met., fl. Oct. *Bolus* (No. 7523).

A very interesting species, remarkable amongst its congeners by its broad verticillate calloso-ciliate and gland-striped leaves. It has a near ally in *A. lanata*, E. Mey. (which was collected in the same neighbourhood by Drège, in the leaves of whose specimens I found also the same narrow glands), but in that the leaves are linear and entire. *A. falcata*, Benth., belongs to the same group, but in this the calyx is very different.

Indigofera Guthriei, n. sp. (§ SIMPLICIFOLIÆ). — Fruticulus humilis erectus vel decumbens ramosus, 6–10 cm. altus; rami gracillimi foliati glabri; stipulæ e basi lata setaceæ, 2–2·5 mill. longæ; folia brevissime petiolata oblanceolato-linearia, utrinque angustata, mucronata, internodiis longiora, juniora tenuiter strigosa demum glabrescentia, 1·5–2·5 cm. longa, 2–2·5 mill. lata, marginibus involutis, superne pallidiora; racemi pauci recti, laxe 2–5-flori, foliis 1½–2-plo longiores, bracteis setaceis minimis, pedicellis calyce brevioribus; calyx turbinatus strigoso-hispidulus, 3–3·5 mill. longus, segmentis acuminatis tubo 2–3-plo longioribus; corolla externe villosa 8 mill. longa, partibus subæquilongis; vexillum orbiculare vel ovatum acutum unguiculatum, carina acuta; ovarium lineari-teres glabrum; legumen maturum haud visum.

HAB: South-western Region; Cape Colony: Hottentot's-holland Mts., near Sir Lowry's Pass, alt. 460 met., fl. Jan.–Feb., *F. Guthrie; Bolus* (No. 7509).

A small smooth shrublet allied to *I. simplicifolia*, Lam. (from Sierra Leone and Angola); but appears to differ in habit, as well as by its involute leaves, longer racemes, and smaller flowers, which are coloured pink. It may also be near to *I. Kraussiana*, Meisn. (of which Harvey has omitted all mention in the *Flor. Cap.*), but which has shorter and broader leaves, and an obtusely lobed calyx.

Indigofera psammotropha, n. sp. (§ UNIJUGÆ).—Annua?, vel biennis?, humilis decumbens, 10 cm. alta, basi ramosa vix lignosa; rami simplices subangulati pubescentes laxe foliati, ad 20 cm. longi; stipulæ setaceæ 2–3 mill. longæ; folia heteromorpha utrinque strigosa, inferiora minora petiolo communi 1 cm. longo foliolis oblongis integris obtusis 1–1·2 cm. longis, superiora gradatim majora ad 7 cm. longa, petiolo communi 1·9–4 cm. longo, petiolulis 1 mill. longis, foliolis oblongis lanceolato-oblongisve integris inciso-dentatisve subobtusis mucronulatis, terminali ad 4 cm. longo, 4–6 mill. lato, lateralibus minoribus; racemi axillares, petiolis duplo breviores, 3–5-flori, pedunculis 4–6 mill. longis, pedicellis brevissimis; calyx turbinatus strigosus, segmentis setaceis tubo subæquilongis; corolla glabra, 4–5 mill. longa, calycem 2–3-plo superans; legumina erecto-patentia lineari-oblonga subturgida flavescenti-hirta, stylo indurato rostrata, ad 2·8 cm. longa, 2–2·5 mill. lata.

HAB: Kalahari Region; Cape Colony, near Hope Town, in red sand, alt. about 1100 met., fl. March, *Dr. E. B. Muskett* (No. 2039 of herb. Bolus).

A very distinct species, well characterised by its frequently inciso-dentate leaves, very short racemes, and stout pods. The leaves are green, either entire or with 1–3 short broad acute teeth on either side. The species may be placed next to *I. argyroides*, E. Mey.

Indigofera rostrata, n. sp. (§ PRODUCTÆ).—Suffruticosa erecta ramosa; rami subvirgati foliosi adscendentes, tenuiter strigoso-pubescentes, ad 30 cm. longi; stipulæ setaceæ patentes; folia sæpius dense imbricata erecta, rarius patentia, imparipinnata 3–5-juga, jugis inferioribus 2–3 mill. supra basin proditis, petiolo communi 0·6–3 cm. longo, foliolis lineari-oblongis utrinque acutis, vel obovato-oblongis obtusis, mucronulatis, plus minus strigosis, superne sæpe glabris, complicatis expansisve, 1–2·3 cm. longis; racemi axillares, pedunculo inferne nudo, sursum dense multifloro erecto-patenti, foliis 2–7-plo longiori; flores majusculi ad 1·5 cm. longi, externe fulvo-sericei; calyx turbinatus strigosus, segmentis subulatis acutis vel acuminatis, circa 3 mill. longus; vexillum obovatum, alæ carina breviores; legumen adscendens rectum cylindricum griseum tenuiter strigosum apice rostratum, 4–4·9 cm. longum, 2–2·5 mill. latum.

HAB: South-eastern Region; Cape Colony: near Komgha, on grassy hills, alt. 550 met., fl. March, *Flanagan* (No. 509); Mt. Currie, 1600 met., *Tyson* (No. 1812; also No. 1264 of Herb. Austr.-Afr., *MacOwan & Bolus*). Orange Free State: Harrismith distr., 1700 met., fl. Dec., *Bolus* (Nos. 8149, 8150); also, perhaps, *Cooper* (No. 867). Trans Vaal Republic: near Olifant's R., Nov., *Schlechter* (No. 3761).

A somewhat virgate shrub, variable as to the shape and size of its leaflets, and the length of its calyx-segments, but pretty constant in other respects. It has the habit of *I. tristis*, E. Mey., next to which I should place it, but is usually more robust, and with larger flowers, which resemble those of *I. hedyantha*, E. & Z. The less luxuriant specimens show narrower leaflets, and the leaves more closely gathered round the branches; Cooper's 867, which I quote with doubt, is an extreme form of this, from a high altitude. In all, the long racemes of from 9 to 13 cm. in length, the peduncle nude for more than half the length, and the strongly-beaked pod, appear to be constant characters.

Indigofera natalensis, n. sp. (§ PRODUCTÆ). — Suffruticosa glabrescens; rami graciles adscendentes foliati subgeniculato-flexuosi; stipulæ subulatæ minimæ deciduæ; folia petiolata imparipinnata 1–2-juga, 5–6·7 cm. longa, petiolo communi gracili, foliolis late ovatis sursum longe angustatis subobtusis mucronulatis glabrescentibus, terminali ad 4 cm. longo, 2·2 cm. lato, lateralibus minoribus, petiolulis (cum petiolis) basi verrucoso-glandulosis;

racemi axillares laxe pluriflori, foliis plerique breviores rarius longiores, pedunculo gracillimo, bracteis minimis persistentibus, pedicellis capillaribus 3 mill. longis, floribus 5 mill. longis; calyx turbinatus pubescens 5-nervus dentibus deltoideis obtusis; vexillum suborbiculare cum alis carinaque æquilongis tenuiter pubescens; ovarium 3-ovulatum; legumen erectum subcompressum marginatum glabrum 4–5 cm. longum.

Hab: South-eastern Region; Kaffraria, between Umzimvubu and Umzimkaba Rivers, alt. 250 met., *Drège* (without No. in herb. Kew). Natal, *Gerrard* (No. 1882!); *Sanderson* (No. 596!); Inanda, fl. April, *Wood* (No. 872!); Murchison, in bush, *ibid.* (No. 3062!).

Not much like any South African species known to me, and distinct by its large and peculiarly shaped leaflets. The stout strong pod is in marked contrast with the small delicate flowers, which, in Wood's 872, are noted as white. I should place it next to *I. micrantha*, E. Mey.

Indigofera seticulosa, Harvey, in *Flor. Cap.* iii. 196, var. luxurians. — Ramis rufescentibus, setis glandulosis copiosioribus, 2–3-plo longioribus, foliolis majoribus, 5–15 mill. longis, 1·5–3 mill. latis, calycis segmentis setaceo-acuminatis tubo 3–4-plo longioribus.

Hab: South-eastern Region; Natal: Umhloti and Inanda, on grassy hills, alt. 450–500 met., fl. Feb. *Wood* (No. 1602).

Harvey described from a single poor specimen preserved in the Kew Herbarium, marked "Armstrong," of which the origin was quite uncertain. There is no doubt of the specific identity of Wood's specimens, although they look at first sight so different that I have thought it desirable to describe their characteristics, and to publish their certain South African station.

Indigofera Woodii, n. sp. (§ Productæ). — Fruticulus erectus vel decumbens sæpius e basi ramosus tenuiter strigosus; rami virgati simplices vel dichotome ramosi graciles pauce foliati vel dense foliosi; stipulæ minutissimæ deciduæ; folia imparipinnata, 0·5–2 cm. longa, 3–6-juga sæpius 4–5-juga, foliolo terminali sessili rarius in petiolo communi producto insidente, foliolis obovatis, oblongis, obtusis, vel sæpius lanceolato-linearibus acutis, mucronulatis superne glabris, 2–6 mill. longis; racemi gracillimi, foliis 2–5-plo longiores, 2·5–5·5 cm. longi, bracteis setaceis minimis sæpe deciduis, pedicellis capillaribus 4–7 mill. longis; calycis tubus minimus, segmentis setaceis corolla dimidio brevioribus vel fere æquilongis; corolla pubescens 5–6 mill. longa; legumen cylindricum rectum tenuissime strigosum ad 2·1 cm. longum.

Hab: South-eastern Region; Cape Colony and Natal.

Var. α. parvifolia; humilis, 12–15 cm. alta, foliis 5–7 mill. longis, foliolis complicatis 2 mill. longis, terminali sessili, racemis foliis 1½–2-plo longioribus. Griqualand East, summit of Mt. Currie, alt. 2300 met., fl. Feb., *Tyson* (No. 1758).

Var. β. intermedia; erecta vel decumbens, ramis dense foliosis, foliolis sæpe oblongis obtusis, terminali petiolato rarius sessili, racemis foliis 2–2½-plo longioribus. Boschberg, near Somerset East, *MacOwan* (No, 1523), *Bolus* (No. 1755); Griqualand East, Mts. near

Clydesdale, 900 met., fl. March, *Tyson* (No. 1267 of Herb. Aust.-Afr., *MacOwan & Bolus*).

Var. γ. LAXA; ramis longioribus laxioribusque, ad 58 cm. longis, paucifoliatis, internodiis longioribus, foliis majoribus ad 2 cm. longis, racemis foliis 3–5-plo longioribus. Natal, Inanda, alt. 550 met., fl. Febr., *Wood* (Nos. 974 & 781; also No. 1140 of Herb. Austr.-Afr., *MacOwan & Bolus*).

A very variable species, allied to *I. ovina*, Harv., but with much smaller leaves and longer racemes, proportionately to the leaves. For the most part the common petiole is produced beyond the last pair of leaflets, except in var. α; but this character, which Harvey relied upon to separate his sections *Pinnatæ* and *Productæ*, cannot be absolutely trusted in this genus. I have not unfrequently found them both with petiolate and sessile terminal leaflets on the same plant. The var. α looks extremely different from var. γ, but the former occurs at a high elevation, and β seems to connect them. A common character is the somewhat long and often hair-like pedicel. The species may be placed next to *I. seticulosa*, Harv.

Carpacoce heteromorpha, Bolus. — Fruticulus humilis robustus decumbens ramosus; rami validi adscendentes pubescentes, dense foliosi, ramulis brevibus vestiti; folia opposita imbricata linearia acuminata connata, basin versus ciliata, patenti-recurva, 1–2 cm. longa, stipulis nullis vel cum vaginis foliorum connatis; flores axillares et terminales sessiles ebracteolati, inter folia fere absconditi; calycis lobi 4, erecti subæquales lineares ciliati, 6–7 mill. longi, tubum corollæ superantes; corollæ lobi 6–7, lanceolati patentes, tubo 4–5 mill. longo subæquilongi, apice calloso-uncinati; stamina 6–7, exserta; ovarium turbinatum, stylo villoso longe exserto, corollam superante; fructus turbinatus, lobis calycis coronatus, semine pyriformi, minute muricato, nigro.—*Merciera heteromorpha*, Buek, in Eckl. & Zeyh. *Enum.* p. 387 (1837).

HAB: South-western Region; Cape Colony: amongst rocks on the Babylon's Tower Mt., fl. Aug., *Eckl. & Zeyh.* (No. 2421); sandy hills near Elim, alt. 100 met., fl. July, *Bolus* (No. 6972).

Different in habit from the other species of this genus, and somewhat resembling *Merciera brevifolia*, A. DC. Buek, in describing it, noted it as "a singular plant, most likely constituting a distinct genus." Harvey distinguished it as a Rubiacea, but, probably from want of good specimens, proceeded no further. The old specific name fits its present position; for it differs from its congeners by its 4 nearly equal calyx-lobes, and by its 6–7-lobed corolla. The peculiar hook with which the corolla-lobes are tipped is entirely on the upper, not on the under side, as Bentham describes it in the *Gen. Plant.* ii. p. 141.

THE ROBERT BROWN MEMORIAL.

On Friday, the 18th October, a memorial bust of Robert Brown was unveiled at Montrose, his native town, by his kinswoman Miss Hope Paton, at whose order it had been executed by Mr. Stevenson, R.S.A., of Edinburgh. Invitations had been sent to representative

botanists, especially those representing institutions with which Robert Brown had been connected. Among those who attended were Mr. Carruthers, Mr. George Murray, Prof. Balfour, Prof. Trail, Prof. Bower, Prof. Geddes, Prof. D'Arcy Thompson, besides a large gathering of local naturalists. Letters of apology for absence from Sir Joseph Hooker and Dr. King, of Calcutta, were read by the Town Clerk at the meeting which followed the ceremony of unveiling. The bust, of which we give a representation, is placed in a niche in the outside wall of the house in which Robert Brown was born, and the Town Council has undertaken that, in the event of this house being pulled down in the course of municipal improvements, the bust will find a place in the wall of the new Town Hall which it is proposed to erect on the spot. After the formal unveiling and a brief speech by Mr. Jamieson Paton handing over the bust to the town, and another from the Provost accepting its custody, a meeting was held in the Municipal Chambers, the Provost and Council entertaining the company to a cake and wine banquet. At this meeting Mr. Carruthers was the principal speaker, and we are able to give the following extracts from his speech :—

I owe the pleasure of being present and the honour of saying something on the life and work of Robert Brown to the fact that for a quarter of a century I have occupied Mr. Brown's chair in the Botanical Department of the British Museum, and perhaps also because, like Mr. Brown, I have filled the honourable office of President of the Linnean Society. It is 122 years since Robert Brown was born in the house we have just visited, and where we have seen Mr. Stevenson's admirable bust of the great botanist unveiled by his relative Miss Paton, and presented by her to the town. The inhabitant of the house at that time was the Rev. James Brown, a minister of the Scottish Episcopal Church, whose father, a Forfarshire farmer, lost his life in fighting for Prince Charlie at Culloden. The Scottish Episcopalians were decided Jacobites, but when Cardinal York, the last of the Stuarts, accepted a pension from George III., the Church, interpreting this act as a renunciation of his claim to the British throne, resolved to introduce the name of George III. into their prayers. This gave great offence to many members of the Church. In Edinburgh, one man rose, put on his hat, and walked covered out of the church as a protest against the change. I am somewhat interested in this incident, as the protestor was Charles Smith, my wife's great-grandfather. Those who sympathised with him formed themselves into an independent Episcopal Church, and invited the Rev. James Brown to be their pastor. He accordingly left Montrose, preferring to separate from his Church rather than renounce his "lawful hereditary sovereign." A prelatic church without a bishop being an anomaly, he sought for consecration at the hands of Bishop Rose, who fully sympathised with Mr. Brown and his flock, but did not see it to be his duty to leave the denomination. Accompanied by his two churchwardens (one being Charles Smith) as witnesses, he proceeded to the Bishop's residence at the Bridge of Doune, and was consecrated. I have read the original document, with the attestations of the churchwardens. Bishop Brown prepared a statement in which he maintained the validity of his consecration, and adduced cases in which, in extraordinary circumstances, consecration by a single bishop was accepted as valid. Bishop Brown had no inferior clergy, but was the sole ordained official in this small Episcopal Church. He continued to minister to the flock until his death. He was buried in the Canongate Churchyard, Edinburgh.

I have ventured to narrate this curious and interesting story, as some years ago I saw and read the documents on which it is based, and I fear they no longer exist.

But it is of the Rev. James Brown's distinguished son Robert that I have to speak to you. After three years at Marischal College, Aberdeen, he proceeded to Edinburgh in 1790, and spent four years studying medicine. Under Professors Walker and Hope he made great progress in Botany. He collected plants in the neighbourhood of Edinburgh, in the Botanic Garden there, and in other places in Scotland. He began at this time the careful examination and description of the plants he found. Two folio manuscript books are preserved in the Botanical Department of the British Museum containing the diagnoses of numerous plants, which he made when a student: these my friend and colleague, Mr. James Britten, picked up on a second-hand book-stall, and presented to the Museum. Soon after his graduation he was appointed assistant-surgeon and subaltern in the regiment of Fife Fencibles, and was for nearly five years stationed with them in the North of Ireland. There is also in the Botanical Department an interesting diary of part of these years: this tells of his wonderful appetite for scientific literature; the more important memoirs he epitomised. He collected extensively, and continued to describe his plants with great minuteness. Towards the close of his stay in Ireland he paid a visit to London, and made the acquaintance of Sir Joseph Banks, from whom he received much kindness. He had free access to the herbarium and library of Sir Joseph, and spent most of his time in London under Sir Joseph's roof. An expedition was organised to survey the coasts of Australia, under Capt. Flinders. Sir Joseph Banks secured that a botanist should accompany the expedition, and on his nomination Robert Brown was appointed. To assist him he had a famous botanical painter (Ferdinand Bauer), a gardener (Peter Good), and a man-servant. They sailed for Australia in the middle of 1801, and returned to England towards the end of 1805. He brought with him about 4000 species of plants, three-quarters of which were new to science. Brown carefully studied and to some extent described the plants as he collected them, and the small octavo note-books in which these notes were made were carried about with him secured in rough pockets made of sail-cloth, which are still preserved in the Museum. When his plants were dried, he separated a set of small specimens for more careful study, and as opportunity occurred he carefully described them. This work was completed on his voyage to England, so that when he landed in October, 1805, he not only brought an unprecedented number of new plants, but he had arranged them all in systematic order, and fully described them.

A few months after his arrival, Brown was appointed Librarian to the Linnean Society. For some years he devoted himself to the elaboration of his work on Australian plants. In 1810 he published the first volume of his *Prodromus Floræ Novæ-Hollandiæ.* He followed the Jussieuan method in the classification of the plants, and by his sense of the relative value of the different parts of plants for discriminating the genera and species, the exactness of his descriptions, and his philosophic views of the affinities of plants, he did more than any one else to improve and establish the natural system of plants. He was painfully careful for accuracy in all his work. It was pointed out by a reviewer, who knew more of the language than the substance of the work, that some inaccuracies in the Latinity were to be found in the volume. This led Brown to withdraw the volume after only a very few copies had been sold. He carefully corrected the called-in copies, neatly scraping out and correcting the very trifling errors. Henceforth copies of the *Prodromus* could be had only as a gift from the author; but in Germany two reprints were issued to meet the foreign demand for the work. The manuscripts of this great work and of the portion never published are preserved in the Library of the Botanical Department of the British Museum. The *Prodromus* and some of his separate memoirs led Humboldt to bestow on Brown the title, which has been universally accepted, of "Botanicorum facile princeps, Britanniarum gloria et ornamentum."

I cannot, in this place, ask you to listen to a review of the life work of Robert Brown. His published works laid the foundation for subsequent workers. His investigations into the minute anatomy and physiology of the flower, his elaborate expositions of remarkable plants, his scientific bases for the classification of Mosses, Ferns, Grasses, and other groups of plants, and his lucid treatment of the geographical distribution of plants, indicate some of the important directions in which he advanced the science of Botany.

In 1811 Mr. Brown was elected a Fellow of the Royal Society. Sir Joseph Banks bequeathed his herbarium and library to the British Museum, but reserved to Mr. Brown the free use of both as long as he lived. Mr. Brown, after negotiations with the Trustees, transferred in 1827 the collections to them, and was appointed Keeper. He was President of the Linnean Society from 1849 till 1853; was a Fellow of the principal scientific societies of the world, and had the degree of D.C.L. conferred on him by the University of Oxford.

PLANTS OF WEST GLOUCESTER AND MONMOUTH.*

By W. A. Shoolbred, M.R.C.S.

During the past season a few more species not recorded from v.-c. 34 and 35 have been found in the Wye Valley district, as well as some interesting varieties and hybrids. Several of these were discovered by the Rev. E. S. Marshall during a short visit here in June last. The Rubi have been submitted to the Rev. W. Moyle Rogers, and the Willows to the Rev. E. F. Linton.

Ranunculus triphyllus (Hiern). 35. Broadwell, near Chepstow. — *R. radians* Revel. 34. Ponds, Tidenham. — *R. acris* L., var. *Boræanus* (Jord.). 34. Tuttshill and Woolaston.

Polygala oxyptera Reich. 34. Brookweir, *Marshall*.

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* See *Journ. Bot.* 1894, 263, 311.

Tilia platyphyllos Scop. 34. Tree near pond at Brookweir, native?, *Marshall.*

Prunus Cerasus L. 35. Woods near Tintern; Penterry, &c.

Rubus opacus Focke (*teste* Focke). 35. Yellow Moor, Tintern.—*R. leucandrus* Focke. 35. Itton and Tintern.—*R. podophyllus* P. J. Muell. 35. Beacon Hill, Trelleck, *Ley.*

Potentilla procumbens Sibth. 34. Near Brookweir, *Marshall.* This also occurs in two or three localities on the Monmouthshire side of the valley.

Fragaria elatior Ehrh. 35. Well established on a bank by the road-side, Monorton Valley, near Chepstow.

Alchemilla vulgaris L., var. *filicaulis* (Beauv.) is by far the most common form in the district. — Var. *pratensis* (Schmidt) was found by Mr. Marshall in v.-c. 34, in a wood near Brockweir.

Epilobium lanceolatum Seb. & Maur. One or two plants were found by Mr. Marshall on a bank at Portskewett Station, Mon. Previously recorded for v.-c. 35 by Babington from Tintern, but not found there by any botanist recently, as far as I can ascertain. —*E. adnatum* Grisebach. 34. Tuttshill and quarry base below Pen Moyle, *Marshall.*—*E. montanum* × *roseum.* 35. Chepstow and Shirenewton, *Marshall.* — *E. obscurum* × *parviflorum.* 35. The Glynn, Itton.

Crithmum maritimum L. 35. River-side rocks, Sudbrook.

Heracleum Sphondylium L., var. *angustifolium* Huds. 34. Near Brockweir, *Marshall.* 35. The Glynn, Itton.

Galium erectum Huds. 34. Tidenham.

Crepis taraxacifolia Thuill. 35. Very plentiful in upland meadows near Shirewater. My former Monmouthshire record for this was from one or two stray plants on the Wye bank at Chepstow.

Hieracium murorum L. pt., var. *pachyphyllum* Purchas (*fide* F. J. Hanbury). 35. Limestone cliffs, Piercefield.

Scutellaria galericulata L. 35. The Glynn, Itton.

Stachys palustris × *sylvatica.* 34. Tuttshill.

Ballota nigra L., var. *borealis* (Schweig.). 35. Sudbrook, &c., *Marshall.*

Salix triandra L., var. *Hoffmanniana* Sm. 34 & 35. Wye banks, &c. — × *viminalis* (*hippophaefolia* Wimm. & Grab.). 34 & 35. Wye banks near Bigsweir. "Seems to be the same form of the hybrid as the Sellack (Wye) plant," *E. F. Linton.* — *S. fragilis* L., var. *britannica* F. B. White. 34 & 35. Wye banks and moors by the Severn. — *S. alba* L. 35. Magor and Undy Moors. — *S. Smithiana* Willd. 35. Magor. — *S. cinerea* L., var. *aquatica* Sm. 35. Boggy wood near St. Arvans.

Epipactis atrorubens Schultz. 35. Wyndcliff.

Juncus effusus × *glaucus* Schultz. 34. Hewellsfield (*Top. Bot.* 33 or 34, *A. Ley*).

Agrostis vulgaris With., var. *pumila* (L.). 34. Dry pastures above Brockweir, *Marshall.*

Poa nemoralis L., var. *coarctata* (Gaud.). 34. Tuttshill. 35. Chepstow Castle, &c.

Festuca Myuros L. 35. Wall-top near Tintern.

LICHENES ANTILLARUM A W. R. ELLIOTT COLLECTI.†

EXPONIT EDV. A. WAINIO.

ANNIS 1891 et 1892 cel. W. R. Elliott etiam lichenes in insulis Dominicæ et Sti. Vincenti collegit. Hæc collectio, 154 species complectens, quarum 50 sunt novæ, hic exponitur.

I. DISCOLICHENES.

A. CYCLOCARPEÆ.

Trib. 1. PARMELIEÆ.

1. USNEA.

1. U. BARBATA (L.) Ach. **U. florida* (L.) Wain. Étud. Brés. i. 3. Var. COMOSA (Ach.) Wain. *l. c.* In Girondelle (2000 ped.) in Dominica et in St. Andrews (2500 ped.) in St. Vincent.

Var. PERPLEXANS Wain. *l. c.* 5. In St. Andrews (2500 ped.) in St. Vincent.

Var. XANTHOPOGA (Nyl.) Wain. Thallus erectus aut suberectus, lævigatus aut in eodem specimine interdum passim cartilagineo-verruculosus, sæpe apicem versus leviterorediosus, brevis aut longitudine mediocris (circ. 12–70 millim.), rigidiusculus, flavescenti-stramineus. Stratum myelohyphicum crebre aut sat crebre contextum, KHO lutescens, I non reagens. *U. xanthopoga* Nyl. Lich. Campb. (1876) 2. *U. barbata* v. *xanthopoga* Müll. Arg. Lich. Beitr. (1889), n. 1476 pr. p. — F. *subhirta* Wain. Thallus brevis (12–40 millim.), apicem versus creberrime ramosus, pro parte demum ramis adventitiis aut passim etiam ramis sorediialibus (spinulæformibus) plus minus instructus aut iis destitutus, strato myelohyphico crebro. Thallo pro parte lævigato et minus spinuloso a var. *hirta* (Hoffm.) Fr. differt. Ad parietem ligneum in Girondelle (2000 ped.) in Dominica (n. 495). — F. *molliuscula* Wain. Thallus brevis aut longitudine mediocris (40–70 millim.), apicem versus parcius ramosus, ramis adventitiis et soredialibus destitutus, strato myelohyphico sat crebre contexto. A var. *molli* Wain. Étud. Brés. i. 4, thallo pro parte lævigato, apicem versus sorediosos et strato myelohyphico crebrius contexto differt. Ad corticem arboris in monte St. Andrews (2500 ped.) in St. Vincent (n. 16*a*).

2. RAMALINA.

1. R. GRACILIS (Pers.) Nyl. **R. Antillarum* Wain. Thallo breviore, magis stramineo, apicibus flagelliformibus brevioribus aut vix flagellato-attenuatis et apotheciis minus pruinosis a *R. gracili* (Wain. Étud. Brés. i. 17) differt. Thallus circ. 10–30 millim. altus, erectus, angulato-teretiusculus, fruticuloso-ramosus, sensim attenuatus, ramis primariis 0·3–1 millim. crassis, longitudinaliter parallele canaliculato-striatus, esorediatus, stramineus aut apicibus passim paululum nigricantibus, medulla stuppea, KHO non reagente, ramis patentibus. Apothecia parva aut sat parva, 1–2·5 millim. lata,

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† Mr. Elliott made this collection on behalf of the West India Natural History Exploration Committee.

lateralia, disco pallido, tenuissime pruinoso. Sporæ ellipsoideæ, rectæ aut raro parce obliquæ, apicibus obtusis aut rotundatis, 1-septatis, long. 0·011–0·015, crass. 0·006–0·008 millim., aut parcissime oblongæ et longitudine 0·018 millim. Ad corticem arboris prope Bow-wood Estate (1500 ped.) in St. Vincent (n. 16*b*).—*R. gracilenta* Ach. secund. specim. orig. in herb. Ach. thallo plano et apicibus obtusiusculis, haud filiformibus a **R. Antillarum* differt.

2. R. PERANCEPS Nyl. Fl. 1876, 411; Wain. Étud. Brés. i. 25. F. *leptotelos* Wain., apicibus tenuioribus, filiformibus a forma primaria recedit. Medulla thalli KHO lutescens et demum rubescens. Habitu subsimilis est *R. flagelliferæ* Wain. Étud. Brés. i. 25; Lich. Bras. Exs. n. 620; Wright, Lich. Cub. ii. n. 23*, a qua reactione differt. A *R. ancipite* Nyl. thallo breviore (circ. 30–40 millim. longo) et crebrius ramoso distinguitur. Ad corticem arboris in monte St. Andrews (2500 ped.) in St. Vincent.

3. PARMELIA.

1. **P. dominicana**, sp. n. A *P. perlata* Krempelh. (Wain. Étud. Brés. i. 28; ii. 256), cui habitu similis est, reactione thalli differt. Thallus glaucescenti-albidus, intus albus, subtus niger et ambitu castaneus, laciniis circ. 10–5 millim. latis, marginibus adscendentibus partim sorediosis, in ambitu lobis sat latis rotundatis integris adscendentibus, lævigatus, eciliatus, isidiis destitutus, subtus rhizinis brevibus simplicibus nigris passim instructus, ad marginem et late ad ambitum nudus, KHO superne et intus lutescens, $CaCl_2O_2$ non reagens et addito KHO solum lutescens. Forsan etiam sporis a *P. perlata* differens, at solum sterilis lecta. Ad corticem arboris prope craterem Souffrière in Dominica (n. 114).

2. P. ANTILLENSIS Nyl. Enum. Lich. Husnot Antill. (1869), 7. Thallus KHO superne lutescens, intus lutescens et demum rubescens. Sterilis ad Mt. St. Andrews (1000 ped.) in St. Vincent (n. 13).—Ad sect. *Amphigymniam* (Wain. Étud. Brés. i. 28) pertinet. Thallus subtus niger et ambitu castaneus, lævigatus, sorediis, isidiis et ciliis destitutus, subtus rhizinis brevibus simplicibus nigris passim parce instructus, ad ambitum sat late nudus, lobis rotundatis, integris, leviter adscendentibus.

3. **P. blastica**, sp. n. A *P. antillensi* Nyl. thallo isidioso differt. Thallus superne glaucescenti-albidus, intus albus, subtus niger aut ambitu sæpe castaneus aut raro pallidus, laciniis circ. 10–3 millim. latis, irregulariter lobatis, lobis apice rotundatis integrisque, apicibus marginibusve laciniarum vulgo plus minusve recurvo-adscendentibus, eciliatus, esorediatus, medium versus isidiosus, isidiis tenuissimis brevissimisque, subtus rhizinis brevibus simplicibus nigris passim parce instructus, ad ambitum sat late nudus, KHO superne lutescens, intus primo lutescens, dein rubescens, $CaCl_2O_2$ non reagens. Apothecia parva aut sat parva, circ. 6–1·5 millim. lata, cupuliformia aut concava aut demum planiuscula, subsessilia, imperforata, disco testaceo aut pallido, ambitu interdum demum fissa, margine subintegro, excipulo extus interdum parce isidioso. Sporæ 8næ, ellipsoideæ aut subgloboso-ellipsoideæ, long. circ. 0·007,

crass. 0·005–0·004 millim. (parce visæ). Pycnoconidia long. 0·006–0·005, crass. 0·0005 millim., cylindrica, recta, apicibus truncatis aut raro alterum apicem versus levissime attenuata. Ad corticem arborum in Shawford Estate (n. 899 et 900) et ad Laudat in Dominica.—Ad sect. *Amphigymniam* pertinet et *P. antillensi* Nyl. proxime est affinis. *P. flavescens* (Krempelh.) Nyl. Fl. 1885, 607, secund. specim. orig. in mus. Paris. thallo margine (parce etiam superficie) isidioso (glaucescenti-albido, nec flavescente), ambitu subtus late nudo distinguitur. *P. isidiza* Nyl. (Wain. Étud. Brés. i. 48) ad stirp. *Cyclocheilam* pertinet et *P. tiliaceæ* habitu similis est.

4. **P. scabrosa**, sp. n. A *P. amazonica* Nyl. Fl. 1885, 611 (Wain. Étud. i. 47), thallo leviter ruguloso, subtus denudato et isidiis multo crassioribus differt. Thallus superne glaucescenti-albidus, intus albus, subtus niger et ambitu castaneus aut pallido-castaneus, laciniis circ. 6–3 millim. latis, adpressis, lobis apice rotundatis, crenatis, crenis rotundatis aut anguloso-rotundatis, axillis lacinularum et demum etiam crenarum acutis, lamina isidiosa, isidiis interdum demum in soredia fatiscentibus, leviter rugulosus, etiam subtus demum rugulosus et rhizinis vix ullis distinctis, KHO superne flavolutescens et intus lutescens, $CaCl_2O_2$ non reagens. Sterilis ad corticem arboris prope Belair in St. Vincent (n. 249).

5. P. MINARUM Wain. Étud. Brés. i. 48. Ad truncos arborum in Roseau Valley et Shawford Estate in Dominica. Sporæ ellipsoideæ aut subgloboso-ellipsoideæ, long. 0·010–0·015, crassit. 0·007–0·009 millim., 8næ. Discus apotheciorum testaceus aut testaceo-pallidus. Pycnoconidia long. 0·0035–0·004, crassit. 0·001 millim., subcylindrica aut medio versus alterum apicem levissime incrassata. Medulla thalli $CaCl_2O_2$ rubescens, et addito KHO haud distincte reagens (in specimine e Roseau Valley) aut item rubescens (e Shawford).

6. **P. tropica**, sp. n. Reactione thalli a *P. minarum* differens, at solum sterilis cognita. Thallus superne glaucescenti-albidus, intus albus, inferne niger et ambitu sat anguste castaneus aut testaceo-castaneus, laciniis circ. 4–2 millim. latis, adpressis, sinuato-incisis et sinuatim-inciso-crenatis, crenis rotundatis aut rotundato-angulosis, axillis lacinularum laciniarumque rotundato-conniventibus, et crenarum rotundato-sinuatis, esorediatus, lamina isidiosa, isidiis tenuissimis, ceterum lævigatus, subtus rhizinis brevibus (circ. 0·5 millim. longis), nigris, parce ramosis aut pro parte simplicibus, tenuibus, crebris, fere usque ad marginem instructus, KHO superne flavescens, intus non reagens, $CaCl_2O_2$ non reagens. Ad corticem arborum in Roseau Valley (n. 131) et ad Laudat 1700 ped. s. m. (n. 912) in Dominica et ad Hermitage Woods (1000 ped.) in Cumberland Valley in St. Vincent (n. 276). Etiam ad Sitio (1000 metr. s. m.) in Civitate Minarum in Brasilia legi (n. 1039).

Var. DEFORMIS Wain. Thallo sublævigato, passim parcissime isidioso a forma typica *P. tropicæ* differt. Forma laciniarum intermedia est inter *Cyclocheilas* et *Sublineares*, laciniis magis regularibus et apicibus laciniarum magis angulosis a *P. tiliacea* recedens. Ad corticem arboris in pede montis St. Andrews (1000 ped. s. m.) in

St. Vincent (n. 12). Thallus KHO superne lutescens, intus haud reagens, $CaCl_2O_2$ haud reagens, laciniis circ. 2·5–1·5 millim. latis, subtus rhizinis brevibus, nigris, parce ramosis aut pro parte simplicibus, tenuibus, crebris, fere usque ad marginem instructus. Forsan est autonoma species, at solum sterilis visa.

7. P. CHILENA Nyl. Fl. 1885, 612 (Wain. Étud. Brés. i. 54). Thallus crebre iteratim dichotome laciniatus, laciniis circ. 1·5–0·5 millim. latis, KHO superne lutescens, intus haud reagens, $CaCl_2O_2$ intus levissime rubescens aut haud reagens, sed addito KHO rubescens, isidiis et sorediis destitutus, rhizinis brevibus nigris usque ad marginem instructus. Sterilis ad corticem arboris in pede montis St. Andrews (1000 ped. s. m.) in St. Vincent.

8. **P. cryptochlora**, sp. n. *P. revolutæ* Floerk. et *P. affini* Wain. (Étud. Clad. i. 52) est proxima, at reactione insigni medullæ, in nullo alio lichene visa, ab iis differens, et solum sterilis lecta. Thallus superne glaucescenti-albidus, subtus niger et ambitu castaneus, adpressus, crebre iteratim dichotome laciniatus, laciniis 2–1 millim. latis, planis, vulgo conniventibus axillisque rotundatis, apicibus vulgo subtruncatis, isidiis destitutus, passim sorediis instructus, ceterum lævigatus, subtus rhizinis brevibus (circ. 0·5 millim. longis), ramosis aut pro parte simplicibus, nigris, crebris, fere usque ad apicem et marginem laciniarum instructus, KHO superne flavescens et demum sordide virescens, intus *pulchre virescens* (colore demum evanescente), $CaCl_2O_2$ intus leviter rubescens et addito KHO intensius rubescens. Ad corticem arboris ad Laudat (1700 ped.) in Dominica una cum *P. tropica*.

Trib. 2. STEREOCAULEÆ.

1. STEREOCAULON.

1. S. VIRGATUM Ach. (secund. herb. Ach.); Müll. Arg. Lich. Beitr. (1887), n. 1134. *S. furcatum* Th. Fr., De Stereoc. Comm. (1857), 14, pr. p.; Nyl. Syn. Lich. (1858–60), 245, pr. p.; Enum. Lich. Husn. (1869), 5.

f. *primaria* Wain. Axis centralis pseudopodetiorum KHO lutescens et demum aurantiaco-rubescens aut rubescens. Pseudopodetia KHO extus lutescentia. Ramuli phyllocladoidei teretes, KHO lutescentes. In rupe ad Laudat in Dominica (n. 889), ad craterem Souffrière (1000–3000 ped. s. m.) in St. Vincent (n. 143).

f. *applanata* Wain. Axis centralis pseudopodetiorum KHO lutescens et demum fulvescens. Pseudopodetia extus KHO haud reagentia. Ramuli phyllocladoidei leviter applanati, KHO lutescentes. Supra rupem littoralem in Richmond Valley in St. Vincent (n. 193). Podetia longitudine circ. 20–40 millim.

f. *Achariana* Wain. Axis centralis pseudopodetiorum KHO lutescens. Pseudopodetia KHO extus lutescentia. Ramuli phyllocladoidei vulgo teretes, KHO lutescentes. In rupe in Roseau Valley (2000 ped. s. m.) in Dominica (n. 110). Specimen originale *S. virgati* in herb. Ach. ad hanc formam pertinet.

Trib. 3. Lecanoreæ.

1. Lecanora.

1. L. subfusca (L.) Ach. var. chlarotera (Nyl.) Wain. Étud. Brés. i. 77. Ad corticem arboris in Emsol Estate in Dominica (n. 537).

2. L. cinereocarnea (Eschw.) Wain. *l. c.* 80. Ad corticem arboris prope Kingstown in St. Vincent.

3. **L. stramineoalbida,** sp. n. Thallus crustaceus, effusus, sat tenuis, verruculoso-inæqualis, albidus aut sordide albidus, esorediatus, KHO lutescens. Apothecia mediocria, circ. 1–1·5 (–0·7) millim. lata, adpressa, disco plano, stramineo, nudo, $CaCl_2O_2$ non reagente, margine tenui, subcrenulato aut verruculoso-ruguloso, discum plus minusve superante, thallo concolore. Hypothecium albidum vel albido-pallescens, inferne pallescens et passim fulvescens, inferne KHO fulvorubescens. Hymenium iodo persistenter cærulescens. Sporæ 8næ, ellipsoideæ, simplices, decolores, long. 0·015–0·013, crass. 0·009–0·006 millim. In stirpem *L. subfuscæ* pertinet, disco stramineo, neque pallido, dignota. Ad corticem arboris in Richmond Valley in St. Vincent (n. 239).—Apothecia numerosa et sat crebra, demum sæpe subangulosa.

4. L. prosecha Ach. Lich. Univ. (1810) 346 (*L. subfusca* v. *prosecha* Nyl. Addit. Nov. Granat. 543; Stizenb. *De Lecan. subfusca*, 7). Secundum specimen orig. ex ins. Bartholomei in herb. Ach. ad Aspicilias, neque ad stirpem *L. subfuscæ* pertinet. Omnino similis ab Elliott abundanter lecta est. Thallus crustaceus, crassitudine mediocris (circ. 0·5 millim.), subcontinuus, rimulosus aut areolato-rimulosus, stramineo-glaucescens aut rarius glaucescenti-albidus, KHO lutescens et demum fulvescens, $CaCl_2O_2$ non reagens, iodo non reagens, hypothallo cæruleonigricante sæpe passim anguste limitatus. Apothecia parva, 0·7–0·4 millim. lata, thallo immersa, immarginata, disco plano aut demum convexiusculo, nigro aut atro-sanguineo aut sanguineo, nudo, thallum æquante aut demum leviter superante. Epithecium rubricoso-fuligineum aut rubricosum, KHO non reagens. Hypothecium pallidum. Sporæ 8næ, simplices, decolores, oblongæ aut ellipsoideæ, long. 0·014–0·009, crass. 0·006–0·005 millim. Ostiolum conceptaculi pycnoconidiorum macula cæruleofuliginea minuta circumdata. Pycnoconidia filiformi-cylindrica, bene curvata, long. 0·022–0·018, crass. 0·0007 millim.—*Lecanora subimmersa* (Fée) Wain. Étud. Brés. i. (1890), 98, huic speciei proxime est affinis, thallo cæsio-albido aut albido, neque stramineo-glaucescente, ab ea differens. Diversa est *L. subimmersa* Müll. Arg. Lich. Exot. ii. (1893), 124.

f. *granulifera* Wain. Thallus passim sorediis irregularibus granulosis instructus. Apothecia nigra. Supra rupem ad Souffrière (n. 138) et Bath Estate (n. 140) in Dominica et ad Fort Charlotte in St. Vincent (n. 288). Ad hanc formam *L. prosecha* Ach. in herb. Ach. pertinet.—Hymenium iodo persistenter cærulescens. Hypothallus albidus, demum fulvescens et KHO violascens.

Var. rubescens Wain. Thallus sorediis destitutus. Apothecia sanguineo-rubescentia aut pro parte atrosanguinea. In f. *granuli-*

feram sæpe transit, quamquam facile pro specie autonoma censeri potest. Supra rupem ad Souffrière (n. 146) et Bath Estate (n. 141) in Dominica et ad Baleine Falls (n. 295), Lomond Bay et Fort Charlotte (n. 287) in St. Vincent.—Pycnoconidiis cum f. *granulifera* congruit.

(To be continued.)

NEW AFRICAN CONVOLVULACEÆ.

By A. B. Rendle, M.A., F.L.S.

Ipomœa marmorata Britten & Rendle, sp. n. Caule lignoso striato glabro, foliis magnis petiolatis reniformibus vel a basi reniforme suborbicularibus, margine crispulata apice rotundo vel retuso, facie superiore sparse inferiore in venis venulisque dense albo-tomentosa; pedunculis brevibus unifloris, floribus magnis, brevius pedicellatis; sepalis magnis late ovato-oblongis, crassiusculis, glabris, obtusis, rarius retusis; corolla longe tubulosa superne ampliata, glabra; antheris et stigmate subgloboso haud exsertis.

Hab. Lake Stephanie, *Donaldson Smith*, May 26, 1895. Herb. Mus. Brit.

A striking plant, characterised by its long tubular flowers and large broad leaves, to which the broad protruding tomentose veins give a marbled appearance on the under surface. The petioles are equal to or rather shorter than the length of the blade. The oldest and largest leaf is reniform, with a retuse apex, 2½ in. long and 5 in. broad; the three following are 2½–2 in. long by 3–2¾ broad, and are rounded above. The short strong peduncle (⅓ in.) bears a single flower and two lateral alternate bract-scars, the axils of which contain the remains of a bud. The short stout pedicel is 8 lines long. The inner sepals are 1 in. by 8 lines, the two outer slightly shorter. The corolla is 5 in. long, and of uniform diameter (¼ in.) for about 3½ in.; in the already withering flower the stamens and stigma reach to about this level.

Is very near the South African *I. albivenia* Don, the leaves of which are similar in shape, and show the striking marbled appearance of the lower surface due to the broad densely tomentose veins and veinlets; it is, however, at once distinguished by its very large calyx, twice the size of that of *I. albivenia*; the corolla is also larger, but in less proportion than the calyx. The same distinction separates it from *I. lapidosa* Vatke (e descript. in *Linnæa*, 43, p. 507), an East Tropical African species, in which moreover the leaves are longer than broad. *I. Wakefieldii* Baker (*Kew Bulletin*, 1894, p. 74), from the Nyika Country, is also closely allied, but the leaves are thinner and tomentose only when young; while the calyx is again only about half as large as in *I. marmorata*, and not glabrous.

Ipomœa dammarana, sp. n. Erecta, albo-tomentosa, caule rigido lignoso; foliis mediocribus ovato-orbicularibus, facie inferiore et petiolis velut caule et pedunculis dense, facie superiore sparsius albo-tomentosa; floribus axillaribus solitariis, pedicellis quam petiola duplo brevioribus, bracteis clavato-oblongis ad medium calycem attingentibus; sepalis ellipticis obtusis; corolla speciosa glabra late tubulosa superne ampliata; staminibus inæqualibus, a basi triangulari pilosa insertis, polline sphærico echinulato; stigmate capitato biglobulare.

Hab. Dammara-land, *T. G. Een*, 1879. Herb. Mus. Brit.

The whole plant as far as the exposed surface of the calyx bears a short dense white tomentum. The leaves are scarcely 1¾ in. long and slightly broader, and have a small apiculus; the slender stiff leaf-stalk is about 10 lines. The stout pedicel (¾ in. long) bears a pair of erect bracts, ½ in. long by nearly 2 lines broad above the middle. The blunt equal sepals are scarcely ½ in. long and ¼ in. broad. The corolla is 3 in. long, and very broadly tubular to just above the middle, where it becomes gradually expanded; the stamens and style reach to about its middle.

Near *I. verbascoidea* DC., but distinguished by its smaller more rounded leaves, with a very rounded apex.

Ipomœa Donaldsoni, sp. n. Frutex (?) lignosa, ramis vel ramulis patentibus subteretibus spinosis; foliis minimis reniformibus, in petiolis et facie inferiore dense pubescentibus; floribus inter minores solitariis, axillaribus, pedicellis brevibus; sepalis crassiusculis, 2 exterioribus late ovalibus quam interiora suborbicularia vix brevioribus, glabris sed margine membranacea breviter ciliata; corolla infundibuliforme, purpurea, areis mesopetalinis 5-lineatis distinctis; staminibus 5, in basi triangulare et supra pilosis, polline sphærico echinulato; ovario, cum disco annuliforme cincto, glabro, stylo tenui integro.

Hab. Okoti and Schebele, Somali-land, *Donaldson Smith*, Sept. 1894. Herb. Mus. Brit.

The stiff straight horizontal or slightly ascending branches, like the axis bearing them, have a thin deep reddish bark, and end in a sharp point. The very small leaves (2 lines long by 3 broad) are borne two or more together on suppressed lateral shoots of the spiny branches. The petiole is about as long as the leaf, which is folded upwards along the midrib, thus protecting the only sparsely hairy upper surface. The slender pedicels are 2½ lines long; the calyx 2 lines, the light purple corolla 8 lines, and nearly as much across the open mouth; the stamens 3½ lines, the style, which is broken off below the stigma, exceeding them.

The species is at once distinguished by its remarkable xerophilous habit.

IPOMŒA BLEPHAROPHYLLA Hallier, var. CORDATA, var. nov. Foliis basi cordatis, quam in typo latioribus et ovato-oblongis.

Hab. Marungu, Ukikuyu Country, *J. W. Gregory*, July 14, 1893. Herb. Mus. Brit.

Differs from the type in the invariably cordate, not entire, base of the leaves, which are moreover often broader, and not of uniform breadth, but become gradually narrower from base to apex. The general habit and characters of inflorescence and flowers correspond so well that I do not think the plant is specifically distinct.

Ipomœa Britteniana, sp. n. Volubilis, caule glabro tenui, foliis laxis exacte cordatis acuminatis, venis prominulis sparse pilosis, margine scabridula et ciliolata: pedunculo brevi petiolo subæquante, floribus ad 7 subumbellatis, breviter pedicellatis, bracteis minutis ovatis; sepalis crassiusculis glabris subæqualibus, ovatis obtusiusculis, exterioribus verruculosis; corolla tubuliforme superne ampliata, areis mesopetalinis 5-lineatis, valde distinctis; staminibus inæqualibus in basi lata et supra pilosis, polline rotundo, echinulato; stigmate capitato; capsula brunnea tenui glabra breviter apiculata, seminibus 4 glabris cuneiformibus.

Hab. Ngatana, Tana River plains, *Gregory*, 1893. Hb. Mus. Brit.

A slender climber, with leaves 1–1½ in. long and 10–12 lines broad, often turned back at their insertion on the petiole (about ½ in. long). The strong scabridulous peduncle is 5 lines long, the smooth pedicels 3–5 lines. The calyx is nearly ⅓ in., the corolla less than 1 in. long, the tube 1½ lines in diameter. The five stamens vary from 2½ to 3½ lines in length. The roundish light brown capsule is about 2 lines in diameter; the blunt and flattened wedge-shaped brown seeds are quite smooth.

Near *I. obscura* Ch., but distinguished by its quite smooth seeds, the greater number of flowers in the umbel, and more acuminate minutely ciliolate leaves. Is also closely allied to *I. ophthalmantha* Hallier, but again separated by its smaller differently-shaped glabrous light brown seeds.

Ipomœa Greenstockii, sp. n. Suffrutex humilis hirsutula, ramis lignosis brevibus tenuibus teretibus; foliis densis linearibus vel lineari-oblongis apiculatis, in costa mediana plicatis, breviter petiolatis; floribus paucis magnis subsessilibus, foliis circumdatis; bracteis linearibus brevibus; sepalis 2 exterioribus majoribus ovato-lanceolatis, interioribus angustioribus acuminatis, et qua obtectis glabris; corolla glabra infundibuliforme purpurea, areis mesopetalinis angustis lineis 2 conspicuis valde delimitatis; staminibus inæqualibus, polline sphærico echinulato; stigmate capitato.

Hab. Pilgrim's Rest, Transvaal, *Rev. W. Greenstock*, 1879. Herb. Mus. Brit. A plant in Herb. Kew (Wood, Natal, No. 4490) is, I believe, the same.

A small bushy plant 3–6 in. high, the thin wiry branches bearing numerous leaves, which reach 1½ in. in length, with a breadth of 1½–3½ lines, and are densely somewhat stiffly hairy, except on the upper surface, which is protected by the upward folding of the leaf along the midrib. The two or three large flowers are in the centre of the plant; the short pedicel, bracts, and calyx, where exposed, bear hairs similar to those by which the leaves and branches are invested. The sepals are 7 lines long, the outermost the broadest (3 lines) and subacute, the others successively narrower, and increasingly acuminate. The corolla is 1½ in. long by 1¼ diameter at the mouth. The five stamens are all unequal, 5½–8 lines in length, two being conspicuously longer than the rest; the style, with its capitate stigma, is intermediate in length between the shorter and longer stamens.

Is near the South African *I. argyreoides* Choisy, but distinguished

at once by its low-growing habit, long hairy indumentum, and calyx with successively smaller sepals.

Merremia Gregorii, sp. n. Suffrutex e rhizomate lignoso late ramoso; ramulis longis tenuibus supra basin pilosam glabris, volubilibus; foliis glabris petiolatis, lamina pæne ad basin 5-fida, segmentis linearibus apice pungentibus interdum inæqualibus; pedunculis petiolis subæquantibus, 1- rarius 2-floris, basin versus fulve-pilosis, bracteis parvis ovatis; floribus mediocribus, sepalis glabris herbaceis lanceolatis acutis, 2 exterioribus interdum ovatis; corolla calycem duplo excedentibus, late infundibuliforme, alba (?) lineis mesopetalinis purpureis notata; filamentis subulatis parte inferiori breviter pilosis, antheris sub apice contortis, polline globoso inerme; stigmate biglobulare.

Hab. Golbanti, Tana River plains, *J. W. Gregory*, Feb. 1893. Herb. Mus. Brit.

A very distinct species, characterised by its palmate leaves with five very narrow sometimes almost filiform segments. The long slender branches are subcompressed. The very slender petioles (6–8 lines long) are sometimes sparsely pilose. The slender leaf-segments are 1¼ in. long, and ½–1 line broad; two of the five are often much shorter than the rest. The calyx is ½ in. long; the sepals about 2 lines broad. The corolla is 1 in. long, the stamens ½ in.

The flowers recall in size and appearance those of *M. multisecta* Hallier, collected by Welwitsch in Angola. The very long peduncles and pinnately divided leaf-segments, as well as its more robust character, at once distinguish the West African species.

CONVOLVULUS SAGITTATUS Thunb., var. MACROGLOTTIS Baker in Fl. Trop. Afr. iv. ined.

Hab. Guaso Mairi, Laikipia, *J. W. Gregory*, June 23rd, 1893.

C. sagittatus is a South African plant, which is represented by varieties in Abyssinia and Eastern Tropical Africa.

BRITISH WILLOWS.

THE third fascicle (Nos. 51–75) of the *Set of British Salices* issued by Messrs. Linton will be issued during this month. By the kindness of the compilers we are enabled to extract the following passages, which, we think, will be found of interest, from the sheet of notes which accompanies the specimens:—

"*S. cuspidata* (No. 51) is no doubt planted at Wybunbury in part, but the scattered bushes which occur and the presence of both parents render it probable that the hybrid is native there. *S. aurita* × *phylicifolia* from Forfar and Perthshire seldom exhibits the presence of *S. aurita* in fair proportion; we give (No. 59) a sample from Clova, which we have tested for four or five years in cultivation, but are glad that Mr. J. Fingland's kind help has enabled us to show (No. 58) a form in which *S. aurita* preponderates and *S. phylicifolia* is the less conspicuous parent. No. 62 is scarcely an average sample of *S. cinerea* L. var. *aquatica*, not being sufficiently distinct from the type; but it was the only available form gathered in the season of 1895. A much more distinct form of the variety occurs in Dorset.

"Our No. 63, *S. cinerea* × *repens*, is the same plant as that which the late Dr. F. B. White named *S. Caprea* × *repens*, and reported as new for Britain in his *Revision* (p. 394) under that title. We have never been able to accept that naming, and are convinced, after six years of cultivation and careful study, that our own naming is the correct one. There is reason to suspect that the two supposed cases of *S. cinerea* × *repens*, given in the preceding paragraph in the *Revision* (pp. 393, 394), one of which was our own gathering from Holme Fen, are merely strong *repens* forms, and that our plant (No. 63) was the only *S. cinerea* × *repens* known for Britain when the *Revision* was published.

"Nos. 68–71 contain several forms of *S. repens*. No less than five of these come from one small area of heath intersected by a line of railway. As these all present some variation, the inference is that there is little or no constancy in *repens* forms; and wider observation tends to show that they are too numerous, and shade off too gradually into one another, to be worth classifying under the discarded varietal names. *S. rosmarinifolia* (No. 72) is introduced into our set because it has long been regarded as British, and perhaps too hastily been dropped out of the British list. It is almost more than a variety, a sub-species rather of *S. repens*. A remarkable form of *S. Myrsinites* is issued as No. 73, only found hitherto in one corner of Glen Fiagh: there is a possibility that *S. nigricans* may have entered remotely into its composition, and may account for the shape and size of the leaves, but the evidence is too slight for any certainty regarding its presence."

ENLARGEMENT OF THE 'JOURNAL OF BOTANY.'

[With the December number was sent out a circular, announcing a proposed enlargement of this Journal, with a reply post-card on which subscribers were invited to express their views on the matter. The responses have been in almost every instance favourable, and the change therefore begins with the present issue. As it is desirable to put on record in the Journal itself the reasons which have led to the change, the circular above referred to is here reprinted.]

The steady increase in the number of papers which have been sent to the Journal of Botany for publication during the last year has forced upon me the consideration of means whereby to meet the demands upon its space. This increase is gratifying evidence that the Journal is recognized as a suitable medium of communication with the scientific world; and it may be said with truth that it offers the only means by which prompt publication of new discoveries can be secured.

The financial position of the Journal does not, however, warrant any additional expenditure. For the last few years it has not, as was at one time the case, involved any loss, but it does little—in some years nothing—more than pay its way. Of this I do not complain, as I did not undertake the editorship with a view to financial profit; but, on the other hand, I should not be justified in incurring any loss.

After discussing the position with various botanists, I propose to enlarge the Journal by giving an extra 16 pages monthly, and to raise the price of each number to 1s. 8d., and of the annual subscription to 16s. This means that the contents will be increased by one-half, while the charge will be raised by one-third, so that subscribers will be the gainers by the change. At times, of course, it may be desirable to substitute one or more plates for the additional pages, but the general result of the change will be that each number will contain 48 pages, instead of 32 pages.

The change indicated will enable me to give more scope to various branches of botany which have hitherto been somewhat neglected. The discontinuance of *Grevillea* has brought me a large number of cryptogamic papers for which I am anxious to find space; and it will be possible to bring to a speedy termination Mr. W. A. Clarke's interesting "First Records of British Plants," the continued postponement of which others besides myself have regretted. In many other ways, the additional pages will result in making the Journal more useful and more interesting.

The present seems a fitting opportunity for suggesting that the list of subscribers might easily be enlarged, if those who already subscribe will induce their friends to do so. There are many who, for the sake of encouraging science, would be willing to add the Journal to their list of periodicals, or who would present it to some reference library. The work of editing the Journal for sixteen years has been considerable, and financially unremunerative, and I think gives me a claim to the support of those interested in any branch of botany.

James Britten.

SHORT NOTES.

Merionethshire Plants (*Journ. Bot.* 1895, p. 362).—Mr. Hanbury informs me that the Cwm Bychan hawkweed, which I gave in my paper as *H. lapponicum*, is *H. rigidum* var. *serpentinum* F. J. H.—W. R. Linton.

Hieracia Records.—A form of *Hieracium umbellatum* which occurred near Truro has been named by Mr. Hanbury var. *monticola* Jord. The broader and more entire leaves are obvious characters which separate it from the type. In Hants and Bucks *H. sciaphilum* Uechtritz occurs near High Clere, Hampshire, and near Taplow, Bucks. It is probably the *H. vulgatum* of most of the southern counties.—G. C. Druce.

NOTICES OF BOOKS.

Darwin and after Darwin. Vol. II.—Post-Darwinian Questions—Heredity and Utility. By the late George John Romanes, M.A., LL.D., F.R.S. Pp. xii, 344. 8vo. Price 10s. 6d. With portrait of Author. London: Longmans. 1895.

The notice of the first volume of this book, devoted to an exposition of Darwinism, which appeared in the Journal (1892, p. 311), conveyed the reviewer's opinion that it failed to expound with lucidity a subject that was already fairly clear to all cultured minds. It was, in fact, not a literary success. It was not a book that was much needed, and there was therefore no great disappointment about it. It is otherwise here. If ever a book were needed, one containing an examination of post-Darwinian questions, as they are called, is most decidedly that book. A considerable number of mutually destructive and even self-destructive theories have been introduced to the speculative public, and the ordinary working naturalist has had fits of trying to understand them and reconcile them with what he knows, generally ending in the reflection that evolution seems to have happened somehow, but that we appear to be further than ever from accounting for it. Darwinism, with its wealth of observation, its splendid success in fascinating men's minds, its calm and serene purpose, produced a rising market for theories, most of them the product of fireside reflections, conjured up from the inner workings of a ferment of ideas with random recollections of facts to support them—without grit or staying-power. These were fondly hoped to place their authors on pinnacles only a little less than the central Darwin peak. At first the public bought eagerly in this market, but now the prices are all down. Some, like Weismannism, have gone in for re-construction occasionally, but the new issues have fallen flat. "What price Panmixia?" Buyers must remember that this stock is the same as the *Cessation of Selection* of Mr. Romanes, issued earlier.

I had hoped that this volume was to take stock of whatever advance had been made, or to destroy by judicial examination the claims of false prophets, and to clear the minds of such of us as had got confused, but it is too much a continuation of the wrangle. The judicial examination is sometimes like that of a French tribunal, where the judge himself accuses the unhappy man at the bar, and even the witnesses. "Don't bring your Panmixia here. It is my own offspring, and I ought to know." Be all these things as they may, this book is a much better book than Volume I. It does guide us,—it has the effect of making us read again with a better understanding passages in other books that were obscure; it is written in much clearer style, and it shows an extraordinary mastery of the literature and grip of elusive ideas. It is very nearly a great book, and certainly confirms one in an old and long cherished belief that its amiable and much lamented author was often on the point of becoming a great man. There was never a human being but would have gladly welcomed this success had it come. His daring speculations and fertility of ideas, had they been united with an equal share of patient observation, would have raised him to a high place in the history of natural science. The promised Volume III., dealing with Isolation and Physiological Selection, will be looked forward to with a greater anticipation of guidance now that this volume has shown an advance on its predecessor. The questions discussed in the present one frequently involve botanical questions, though they are of interest to us as general biological questions; but even the "hard-boiled botanist," as he is amusingly called, will find something to interest him, and probably disagree with him, in chapter viii. on Characters as Adaptive and Specific.

G. M.

British Fungus Flora: a Classified Text-book of Mycology. By GEORGE MASSEE. Vol. IV. 8vo, pp. 522. London: Bell & Sons. 1895. Price 7s. 6d.

DURING the last quarter of a century so many species of fungi have been added to the British flora, that the genera founded by the older mycologists have become too cumbersome, and have been made to include species too far removed in structural affinity. This is especially the case in those groups which require the use of the microscope for their accurate diagnosis, and which, having been examined only with the naked eye or a pocket-lens, are so briefly and incompletely described, that it is often impossible to ascertain what species the author had in view.

Since the publication of the *Handbook of British Fungi* in 1871, Dr. Cooke and other of our leading mycologists have taken in hand different groups, and revised them as thoroughly as the state of knowledge at the time permitted. But many orders still remaining in confusion, and the number of species still increasing, Mr. Massee has undertaken, in the *British Fungus Flora* now in course of publication, the gigantic task of the revision and rearrangement of all the species recorded as British. This work has now reached the fourth volume, which treats of three out of the five families of the *Ascomycetes*, viz.: the *Gymnoascaceæ*, the *Hysteriaceæ*, and the *Discomycetes*.

The Introduction contains a general description of the order, a clear and concise description of the terms employed in describing the different parts of the plant, and valuable hints on the collection and examination of specimens. This is followed by the systematic arrangement, which, in accordance with the plan of the entire work, commences with the least, and ends with the most highly-developed group. This is no doubt in accordance with nature, but may be confusing to the student who has always been accustomed to work in the contrary direction, and whose herbarium is arranged on the old lines.

This part of the work commences with the small family of the *Gymnoascaceæ*, in which the spore-containing asci are naked, the ascophore being absent. Then follow the *Hysteriaceæ*, in which the fructification is enclosed in a well-developed ascophore; and granting that a perfect linear arrangement of groups of natural objects is an impossibility, it is difficult to understand why this family has been placed here, between the *Gymnoascaceæ*—than which the species are much more highly developed—and the *Discomycetes*, with which they have no very close affinity, instead of next to the *Pyrenomycetes*, a family closely related in structure of ascophore and spores, and of similar habitat; the principal difference being in the longitudinal dehiscence of the ascophore in *Hysteriaceæ*, as compared with the pore-like orifice of many of the *Pyrenomycetes*. As regards the spores, it is probable that every species of the one family might find a place in close relationship with those of the other. With the *Phacideaceæ*, which are placed at the commencement of the *Discomycetes*, the *Hysteriaceæ* have much in common, and therefore would it not be better to consider these as a new point of departure, and to place all three groups after the rest of the *Discomycetes*, and next to the *Pyrenomycetes?* The *Sticteæ* would then lead on in a natural sequence from the *Gymnoascaceæ* to the higher families of the *Discomycetes*, the last of which, *Helvelleæ*, ends the volume.

Each family is preceded by an analysis of the genera, the names of the older mycologists being retained, and where subdivision of genera has been found necessary, old names have been restored, or more modern ones adopted. In some few cases these names seem to have been unnecessarily multiplied, as in the case of *Barlæa*, which is only *Humaria* with globose spores,—surely not a sufficient generic distinction; and *Mitrophora*, although a genus instituted by Léveillé, might well have remained united to *Morchella*, it being unnecessary to divide such a small and well-defined group into two genera, solely on account of the margin of the pileus being adnate in one section and free in the other. In such a comparatively limited fungus-flora as that of Britain, it would be well to cut down the number of generic names as much as possible, and not to follow too closely in the steps of those European mycologists who have manufactured genera to such an extent as to lead to the belief that at no distant date each species will be a genus in itself.

Mr. Massee, however, does not always accept such refined distinctions as those noticed above, but has in at least one instance united instead of divided genera, *Hymenoscypha* being merged into *Helotium*, with the addition of some few species formerly arranged under other genera. This is well, and a study of the analytical table to the *Glabratæ* section of *Pezizæ* will show that the genus thus constituted is separated by sufficiently definite characters from its neighbours. In most of the other genera described in this work, the species have been so grouped into sections that the labour of hunting down a plant is reduced to a minimum; but in this genus the only assistance afforded to the student is that they are grouped according to habitat. This, taking into consideration the author's remark in connection with the generic description, is useful and perfectly legitimate; but some kind of analytical key to the species would have been very acceptable in a genus containing seventy species, which in some of the groups are with difficulty distinguished, especially in the case of dried specimens.

Figures illustrating the genera are given, which, though rather diagrammatic in character, give a good idea of the structure of the plants. Separate indices are provided, one of the genera, and another of the species and synonyms.

In conclusion, this volume may be recommended both to the advanced student, and to the possessor of a microscope who is anxious to find interesting and beautiful objects on which to employ it, and if such an one wishes to help on the study of mycology by original work, the following remarks by the author, in connection with the family *Ascoboleæ*, may indicate to him in what direction it may be prosecuted:—"The members of the present group rank among the most beautiful and interesting of the *Discomycetes*, and at the same time it is certain that they are more imperfectly known than those of any other family. The reason of this is on account of the extreme delicacy and minuteness of most species, many being practically nothing more than a semi-liquid point of jelly in consistency, and unless all the details are drawn up from the living specimen, the diagnosis is certain to be more or less imperfect. To those who have the opportunity, the present group offers an opportunity for adding vastly to our knowledge of these beautiful organisms."

CEDRIC BUCKNALL.

ARTICLES IN JOURNALS.

Annals of Botany (Dec.) — E. C. Jeffrey, 'Polyembryony in *Erythronium americanum*' (1 pl.). — M. O'Brien, 'The Proteids of Wheat.' — E. C. Hansen, 'The Variation of Yeast-cells.' — J. E. Humphrey, 'On some constituents of the Cell' (1 pl.). — A. H. Church, 'Structure of thallus of *Neomeris dumetosa*' (3 pl.).—A. H. Trow, 'Karyology of *Saprolegnia*' (2 pl.).

Bot. Centralblatt (No. 48). — G. Lutz, 'Ueber die oblito-schizogenen Secretbehälter der Myrtaceen.'—(Nos. 49, 51). R. v. Fischer-Benzon, 'Zur Geschichte unseres Beerenobstes.'

Bot. Gazette (Nov. 17). — A. F. Woods, 'Recording apparatus for transpiration' (1 pl.). — R. Thaxter, 'Aquatic Fungi' (*Myrioblepharis*, gen. nov.: 1 pl.). — B. T. Galloway, 'Development of *Uncinula*' (2 pl.). — W. Deane, 'My baby flower-press.' — M. F. Boynton, 'Dissemination of Seeds.'

Bot. Notiser (häft. 6). — J. Erikson, 'Alfvarfloran på Öland.'— E. Nyman, 'En *Moriola*-liknande laf.' — Id., 'Biologiska Mossstudier.' — A. Cleve, 'En röd *Bulbochæte*.' — J. Eriksson, 'Ein parasitischer Pilz als Index der inneren Natur eines Pflanzenbastards.' — A. Nathorst, 'Om några fossila mossor från våra qvartära kalktuffaflagringar.'—Id., 'Om hafre som epifyt.'

Bull. Bot. Soc. France: xli (Session extraordinaire).—F. Camus, *Cryphæa Lamyana*. — E. Fischer, *Coleosporium*. — F. O. Wolf, 'Sur trois nouveaux hybrides du genre *Hieracium*.' — A. Chabert, 'Sur la conservation du Genépy dans nos Alpes.'

Bull. Torrey Bot. Club (Nov. 30).—E. G. Britton, 'Contributions to American Bryology' (2 pl.). — A. M. Vail, *Rhynchosia Michauxii* & *R. Torreyi*, spp. nn. — G. V. Nash, 'American Grasses.' — G. Macloskie, 'Vegetable Spiralism.'

Bot. Zeitung (Dec. 16). — R. Wagner, 'Die Morphologie des *Limnanthemum nymphæoides*.'

Gardeners' Chronicle (Nov. 30). — *Nephrodium dejectum* Jenm., sp. n. — (Dec. 14). *Luddemania triloba* Rolfe, sp. n. (fig. 118). — *Cephalotaxus drupacea* (fig. 120). — (Dec. 28). *Synandrospadix vermitoxicus* (fig. 131).

Journal de Botanique (Dec. 1). — F. Hy, *Medicago media*. — E. Malinvaud, *Lysimachia thyrsiflora* dans la Haute-Loire. — L. G. de Lamarlière, 'Muscinées du Nord de la France.'—(Dec. 1, 16). A. Franchet, Primulacées de la Chine occidentale.—P. Van Tieghem, 'Acrogamie et basigamie.'—L. Morot, *Doassansia intermedia*, sp. n.

Journ. Linn. Soc. (Botany, xxxi, No. 214: Dec. 17).—P. Groom, 'Monocotyledonous Saprophytes' (3 pl.).—I. H. Burkill, 'Variations in number of Stamens and Pistils.'—J. G. Boerlage, *Chimonanthus Ghaeri*.

Malpighia (fasc. xi–xii). — P. A. Saccardo & O. Mattirolo, *Oedomyces leproides* (1 pl.). — L. Buscalioni, 'Studii sui cristalli di ossalato di calcio.'—A. Fiori, 'Paleotulipe, Neotulipe, a Mellotulipe.'

Nuovo Giorn. Bot. Ital. (Nov. 1). — G. Sandri & P. Fantozzi, 'Contribuzione alla Flora di Valdinievole.' — E. Baroni, 'Gigli nuovi della Cina.' — M. A. Mirabella, 'I nettarî extranuziali nelle varie specie di *Ficus*' (1 pl.).

Oesterr. Bot. Zeitschrift (Dec.).—R. Schlechter, 'Asclepiadaceæ Kuntzeanæ' (*Dactylostelma*, gen. nov.). — W. Schmidle, 'Zur alpinen Algenflora' (cont.). — E. v. Halácsy, 'Zur Flora von Griechenland.' — J. Freyn, 'Plantæ Karoanæ Dahuricæ.' — J. v. Sterneck, *Alectorolophus*.—C. Warnstorf, '*Bidens connatus* ein neuer Bürger der europäischen Flora.'

BOOK-NOTES, NEWS, &c.

We are glad to learn that the Rev. W. R. Linton has in hand a Flora of Derbyshire, which he hopes to publish in the course of a year or two. The Flora will comprise the Phanerogams and Cryptogams, Musci, Hepatics, and Fungi. The county will be divided into seven areas, mainly according to the geological nature of its surface. Mr. Linton will be much obliged for any communications on the botany of the county, specially as regards earliest records and first discoveries of plants. These should be addressed to him at Shirley Vicarage, Derby.

An Appendix to the *Bulletin of Miscellaneous Information*, issued towards the end of November, contains a list of "New Garden

Plants of the year 1894." "These lists are indispensable to the maintenance of a correct nomenclature, especially in the smaller botanical establishments in correspondence with Kew"; if this is so, it is to be regretted that this was not issued earlier in the year, as such a list could easily have been completed in the first week of 1895, and published at once. The enumeration includes such plants as "Cypripedium Mme. Octave Opoix" and "Odontoglossum Impératrice de Russie," as well as others "of no horticultural interest;" and the information it gives is thus fully entitled to be classed as "miscellaneous." The number of the *Bulletin* purporting to be for November made its appearance in the latter half of December, but—as if to compensate for this lateness—the first "Appendix" for 1896 has already been published.

Mr. R. Schlechter, whose papers on *Asclepiadaceæ* have lately been appearing in this Journal, left England early in December for a prolonged visit to South Africa. Arriving at Cape Town in January, he will proceed to the Could Bokkeveld. In June or July, according to the rainy season, he will go to the southern parts of Nama-land, then over the Orange River to Lüderitzland. In September he will return south, to visit the less explored western regions, especially the Hantam Mountains. In 1897, starting from Natal through Zululand and Swaziland to the Limpopo Valley, Mr. Schlechter, after crossing the Limpopo River, will explore Matabeleland and the other regions between the Limpopo and Zambesi Rivers. He hopes to return to Europe about May, 1898.

Mr. G. C. Druce has been appointed Curator of the Fielding Herbarium at Oxford.

We are glad to learn that the Monocotyledons of the *Flora Capensis* (to occupy the sixth volume, volumes iv. and v. being left for the remaining Dicotyledons) have been sent to press; and it is to be hoped that, in the interests of the Colonies, Mr. Chamberlain will do something to accelerate the pace of the *Flora of Tropical Africa*, for the continuation of which Lord Salisbury expressed anxiety nearly five years since. We note that neither of these Floras occurs in the list of "Works in preparation at the Royal Gardens, Kew," which appears in the latest issue of the *Bulletin of Miscellaneous Information*, nor is there any indication that the much-needed Guide to the Gardens is in progress. Oddly enough, however, Mr. Jackson's *Index*, completed some months back, still finds a place in the list. Is it not time that the numbering (in roman numerals) of the articles of the *Bulletin* was discontinued? In some cases—*e.g.* "CCCCLXXXVIII. Sumach"—the number is considerably longer than the title to the article, and can serve no useful purpose.

Mr. F. N. Williams has issued a "Provisional and Tentative List of the Orders and Families of British Flowering Plants," which is based on the works of Willkomm and Lange, Engler and Prantl, Parlatore, Caruel, and others, with some additions by Mr. Williams himself. The list is calculated to startle English botanists, "who," Mr. Williams tells us, "cling with tenacious conservatism to the archaic arrangement of Jussieu and DeCandolle," and who are likely to jump when they find *Ranunculaceæ* sandwiched between *Aristolochiaceæ* and *Ceratophyllaceæ*. Mr. Williams proposes the term *phylum* for each of the three primary divisions of flowering plants—the *Gymnospermeæ* (*Coniferæ*) and *Anthospermæ* ("*Dendrophthoaceæ*"—i. e. *Loranthaceæ*) forming two of these, while everything else goes into "Phylum I. Angiospermæ." "This brief tabular statement is issued to those who may be interested in classification, in the hope that it may elicit some suggestions and criticisms, before venturing to take in hand a rearrangement of British genera which shall be more in accordance with the principles of taxonomy taught by continental botanists": so we have something to look forward to. The list is privately printed, but we have no doubt Mr. Williams (whose address is 181, High Street, Brentford) will forward copies to such of "those who may be interested" as have not already received it.

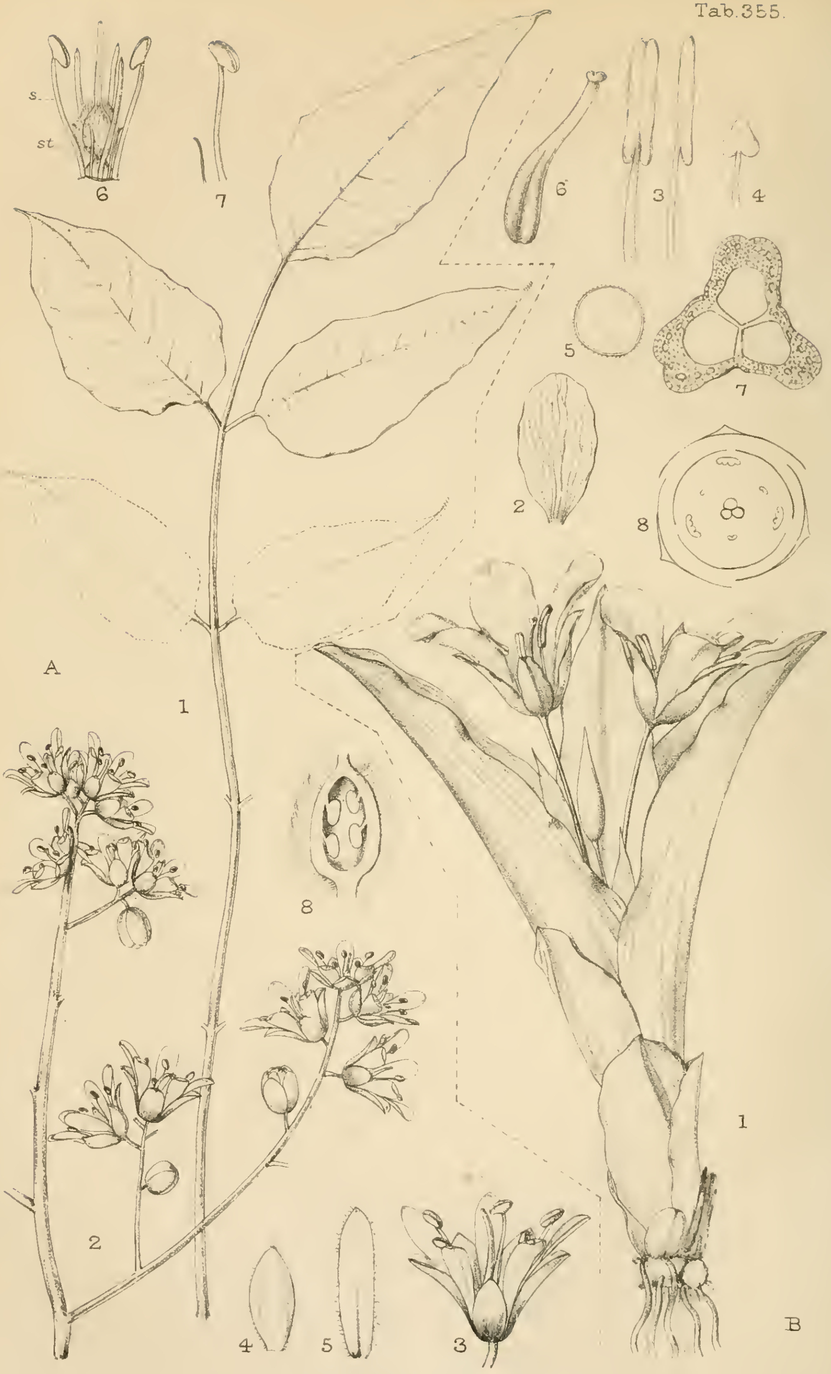
The recently issued part (vol. ii. part 3, 1894–5) of the *Transactions of the Perthshire Society of Natural Science* contains botanical notes by Prof. Trail, and a memoir, with full-length portrait, of Dr. F. Buchanan White.

The Supplement to Mr. Jackson's *Index Kewensis*, which the compiler of that work and M. Durand have in hand, and which will bring the book up to the end of 1895, is making rapid progress. Mr. Jackson's part of the work is completed up to the beginning of December, and includes some 32,000 names.

We much regret to announce the death of Lord De Tabley, better known to botanists as John Leicester Warren, which took place in the Isle of Wight on Nov. 22nd. A further notice will appear in an early issue of this Journal. The death is also announced of Prof. George Lawson, who died at Halifax, Nova Scotia, on Nov. 10th.

John Bracebridge Wilson, who died at Geelong on Oct. 22nd, was born in 1828 at Topcroft, Norfolk, of which place his father was rector. He was educated at St. John's College, Cambridge, and on going to Australia became vice-principal of the Geelong Grammar School, of which the present Dean of Melbourne (Dr. Vance) was then head-master. In 1863 he succeeded to the head-mastership, and continued to hold that office until his death. Mr. Bracebridge Wilson, in addition to his services to marine zoology, was a student of marine botany. He collected seaweeds with great zeal and assiduity, and was very successful in discovering new forms: Prof. J. G. Agardh has described most of these. Through his friend Baron von Mueller, Mr. Bracebridge Wilson was able to help many botanists with specially collected material for research on particular points. He was an admirable collector in every respect, and was careful not only of the condition of his specimens, but of their proper display on the mount. Australian Phycology has lost a devoted student in John Bracebridge Wilson.

Tab.355.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A. Donaldsonia stenopetala *Bak. fil.*
B. Gillettia sepalosa *Rendle*

NEW AFRICAN PLANTS.

(Plates 355, 356.)

Dr. A. Donaldson Smith has lately presented to the British Museum a collection of plants made during his expedition through Somaliland to Lake Rudolf in 1894–95. Unfortunately many of the specimens were injured by damp, but those which remain are of considerable interest. Messrs. E. G. Baker and Rendle have worked out some of these, and have described the following novelties, in addition to the two Ipomœas described on pp. 36, 37.

Dr. Donaldson Smith gave a lecture on his travels before the Royal Geographical Society on Jan. 6th, in the course of which he said that during a sporting trip in Somaliland over two years ago he conceived the idea that he could carry an expedition across that large extent of unexplored country lying between the Shebeli river and Lake Rudolf, with Somalis as a guard, and camels and pack animals. Accordingly he came back to England, and set to work to fit out an expedition, engaging the services of Mr. Edward Dodson, a young taxidermist at the British Museum. Accompanied by Mr. Gillett, they set sail from London on June 1st, 1894. On July 10th they were able to give the order to march from Berbera. They were soon across the hundred miles of bushy, waterless plateau-land called the Haud, and found themselves at Milmil, in the Ogadain country. As their route lay directly west, it was principally through a rough country. The Ogadain was dry, like the rest of Somaliland; the wells and pools of water in the river-beds were far apart, and to the south-west the water was brackish. This was not the case, of course, during the spring and autumn rains, but it was astonishing how quickly the country assumed its half-parched appearance after the rains had ceased. The country became gradually more interesting as it was more unknown. They had one march of three days through a waterless, hilly country, called Sibe. There was no crossing the Ezer, owing to the great rocky walls that surround it, so they had to march down Turfi tug to its junction with the Shebeli river. The Shebeli was flooded, and it was all they could do to cross it. As they progressed they only found a few poor villages of a hundred souls each, the natives presenting the most abject appearance imaginable. The remnant of a great tribe, they were the Arusa Gallas, and their native land extended fifty miles west of the Shebeli river. On Sept. 17th they arrived at Luku, where they were astonished to find a stone tomb erected to a Mohammedan, Sheikh Abai Ezied; and a few days later they reached the imposing tomb of Sheikh Husein. There were five other white tombs of sheikhs scattered about the hilltop on which the town is situated, making quite a gay appearance. The Abyssinian General in command of this country, Wal-da-Gubbra, requested the presence of the leaders of the expedition at Ginia, and showed them every honour.

After waiting at Ginia for a month for the permission of King Menelek to proceed, they decided to start secretly, but, after journeying some distance, were overtaken by the Abyssinian army, the general presenting them with a letter from the king ordering them to return by the way they had come, and there was nothing to do but to accept the situation, bad as it was. They returned into Somaliland, where they spent Christmas in company with Prince Boris, a Russian sportsman, whom they chanced to meet. On Feb. 1st they were across the Shebeli again, and on the way once more to Lake Rudolf, moving as quickly as possible to the Juba, as the Abyssinians might be down on them at any moment. Keeping as westerly a course as possible, he reached the wells of El Madu on March 3rd, beyond which lay a mountainous and waterless tract of country for three days (45 geographical miles). This was successfully crossed, though the expedition suffered from lack of water, and twelve camels died on the way. After going a long way west through the Boran country, and overcoming a temporary outburst of hostility on the part of the natives, they explored the northern end of Lake Stefanie. Going far up to the north they came to a black race of people called the Amars, living high up on a mountain, and it was by their village that he was pointed out the grave of Prince Ruspoli, who had come down from the Juba river, the only traveller that had ever succeeded in getting nearly so far into the country. Going farther on, they came to a large river (50 yards broad, with a current of four miles an hour, and 3½ ft. deep), which he afterwards found flowing into the northern end of Lake Stefanie, and he discovered that it arose partly from Lake Abeia itself and partly from the mountains immediately about that lake.

Their further experiences included an attack by a large and warlike tribe called the Arbore, inhabiting half of the valley above Lake Stefanie, who assailed them with javelins and arrows, but were quickly dispersed by the whizzing of a few bullets. There were no roads, and they had to make paths over ridges two thousand feet high above the surrounding country. On July 4th they found themselves without guides in such a bushy country that they were obliged to make five long marches in the bed of a river knee-deep in water the whole time. As their boots were wearing out, they were forced to walk barefooted; but their spirits ran high—Lake Rudolf was near, and they were to be the first to reach it from the east. After more than a year's wanderings in all sorts of country, and under most diverse circumstances, they found themselves at the goal of their ambition. They reached Lake Rudolf on July 14th, 1895. A journey round the northern end of the lake disclosed the fact that the Nianann was the only river emptying into the lake, and that there was no River Bass, as supposed by Count Teleki.

Mathiola Smithii Baker fil., sp. n. Fruticosa ramosa cortice pallide brunneo ramulis cinereo-pubescentibus. Folia obovata vel oblonga utrinque cinereo-pubescentia vel subtomentosa margine subintegra vel remote serrata, ½–¾ poll. longa, circiter ⅓ poll. lata, apice obtusa vel subacuta, lamina ad basin in petiolum attenuata. Flores racemosi, apicem versus congesti inferne laxiores. Pedicelli breves validi cano-pubescentes. Sepala externe cano-pubescentia anguste oblonga, apice subacuta. Petala circiter 7 lin. longa, calycem dimidio superantia in unguem linearem decurrentia. Fructus cylindraceus validus ad apicem divaricatim bicuspidatus stigmate persistente, ½ poll. longus, adultior ad caulem appressus intus interquæque semina transverse septatus.

Hab. Somaliland, Sibe. In flower and fruit, Aug. 1894, *Dr. Donaldson Smith.*

This plant seems intermediate between the genera *Mathiola* and *Morettia.* In the structure of the flowers and in the inflorescence its affinity is with the former, while, as will be seen, in some of the fruit-characters the affinity is with the latter.

A branching shrub with pale brown cortex. Leaves obovate or oblong, covered on both sides with a close cinereous stellate tomentum, ½–¾ in. long; lamina gradually narrowing to the base, leaving hardly any petiole. Flowers racemose, congested near the apex, lax below. Sepals narrow, oblong, covered externally with a cinereous pubescence. Petals about 7 lines long, lamina oval, claw linear, 4–5 lines. Longer stamens about 4 lines long, shorter nearly 3 lines; anthers basifixed. Siliqua about ½ in. long, between each seed transversely septate. Seed reniform, reddish.

This plant is allied to *Mathiola elliptica* R. Br. It differs in its much shorter, strongly bicusped siliqua. *Mathiola Smithii* is also closely allied to *Morettia Revoili* Franchet (*Sertum Somalense*, t. i.). The longer stamens are not joined as in that plant, and the latter does not seem to have a divaricately bicusped siliqua.

Reseda somalensis Baker fil., sp. n. Caules sesquipedales vel bipedales erecti stricti subteretes pallide virides parce ramosi, foliosi inferne læves, superne pubescenti-glandulosi. Folia omnia indivisa ovata vel ovato-lanceolata obtusa glabra in petiolum attenuata. Flores numerosi, racemum formantes. Pedicelli florigeri 1½ lin., vel apicem versus subnulli, fructigeri circiter 3 lin. longi. Bracteæ lineares. Calycis laciniæ 6 deciduæ angustæ, petala semiæquantes vel longiores. Petala ochroleuca ut videtur. Stamina 14–16. Antheræ oblongæ basifixæ. Ovarium trimerum. Capsulæ elongatæ obtuse trigonæ læves circiter ½–⅝ poll. longæ in racemo imbricatæ. Semina reniformia pubescentia circiter ½ lin. longa.

Hab. Somaliland, Shebeli river. In flower and fruit, Aug. 24, 1894, *Dr. Donaldson Smith.*

Stem suffruticose, erect, 1½–2 ft. or possibly more, sparingly branched, glabrous below, above glandular-pubescent. Leaves ovate or ovate-lanceolate, not lobed; apex obtuse, smooth, pale green; nerves subprominent below; lamina narrowing to the petiole, 2–3½ in. long, 1½–1¾ in. broad. Flowers in dense terminal or lateral spicate racemes. The flower-bearing pedicels attain a length of 1½ lines towards the base of the racemes, above they are shorter; the fruit-bearing pedicels are double the length. Sepals narrow, acute, slightly longer than the laciniated petals. Stamens 14–16. The filaments fall when the young fruit has reached a length of about ⅙ in. Ovary 3-merous. Capsule elongate, contracted at the neck, imbricate in the raceme, 3-dentate.

This plant has rather large undivided leaves, and a dense spicate raceme of flowers. It belongs to the section *Resedastrum*, and is allied to *R. Aucheri* Boiss. and *R. atriplicifolia* J. Gay. It is easily distinguishable from *R. oligomeroides*, a plant recently described by Dr. Schinz, from Somaliland (*Bull. Herb. Boiss.* iii. 397 (1895)). *R. amblyocarpa* Fres., another species recorded from the same country, has much narrower leaves.

Ochradenus somalensis Baker fil., sp. n. Frutex; rami virgati, ramuli spinescentes pubescentes ramulorum cortice pallido. Folia subcoriacea oblanceolata, apice obtusa ad basin attenuata sessilia vel subsessilia glauco-viridia nunc subsolitaria nunc rosulatim disposita, $\frac{1}{3}$–$\frac{1}{2}$ poll. longa, circiter 1 lin. lata. Flores ignoti in racemos dispositi, racemis evidenter 10–23-floris. Pedunculi fructigeri circiter 1 lin. longi, pubescentes. Capsula subcarnosa divaricatim tridentata, circiter $\frac{1}{3}$ poll. longa, 2$\frac{1}{2}$–3 lin. lata, 16–18-sperma.

Hab. Somaliland, Shebeli River, *Dr. Donaldson Smith.* Collected when in fruit, Aug. 1894.

Allied to *Ochradenus Aucheri* Boiss., from Arabia, which (*Fl. Orient.* i. 422) has been placed in the genus *Homalodiscus.*

A copiously branched shrub, the branchlets terminating in spines; both branches and branchlets have a pale cortex. Leaves oblanceolate, pubescent, glaucous green, occasionally subsolitary, more often in rosettes on the sides of the branches and branchlets; leaves $\frac{1}{3}$–$\frac{1}{2}$ in. long; margin entire; apex obtuse, gradually narrowing to the base. Flowers not present, evidently borne in racemes. Capsule shortly peduncled, orange-yellow, the three persistent stigmas being divaricate, subcarnose, not membranous, as in *Homalodiscus* 16–18-seeded. Seeds shining, reddish or brownish black, about $\frac{3}{4}$ line long.

Crotalaria minima Baker fil., sp. n. Annua. Caulis erectus ramosus circiter $\frac{1}{2}$-pedalis, ramulis pilis albidis appresse obtectis. Folia parvissima 3-foliolata, foliola oblanceolata præcipue subtus pilis albidis appresse obtecta, petiolis foliolis brevioribus. Stipulæ breves lineari-subulatæ. Flores inter minores generis brevipedunculati, axillares solitarii. Bracteæ parvæ lanceolatæ. Pedunculi una cum sepalis appresse albidi. Sepala lanceolata acuminata. Vexillum ovatum quam vexillum *Crotalariæ Jamesii* angustius, circiter 2$\frac{1}{2}$ lin. longum. Carina acutiuscula. Ovarium sessile. Legumen late ellipsoideum circiter 3$\frac{1}{2}$ lin. longum, pedicello recurvo, circ. 7-spermum.

Hab. Galla Highlands, Ginia, *Dr. Donaldson Smith.* In flower and fruit, Nov. 1894.

Apparently an annual, with an erect much branching stem and slender root. Leaves quite small, covered with appressed white hairs, 3-foliolate; leaflets oblanceolate, about 2 lines long; petiole generally about 1 line long; leaflets sessile or very shortly petiolulate at the end of the petiole. Flowers small, axillary, solitary, borne on a short recurved peduncle (about 1 line long), when dry of a yellow colour. Sepals lanceolate, acuminate. Standard ovate, 2$\frac{1}{2}$ lines long, not nearly so broad as in *Crotalaria Jamesii* (see

Hook. *Ic.* t. 1350). Keel about 2 lines long, with very short claws, acute. Ovary sessile. Legume pubescent, about 3½ lines long and 2 lines broad, 7-seeded.

Allied to *Crotalaria Grantiana* Harv., but this has thread-like peduncles about 1 in. long.

Crotalaria trifoliolata Baker fil., sp. n. Suffrutex, caulis erectus elatus ramosus ferrugineo-tomentosus. Folia trifoliolata foliola late obovata utrinque tomentosa, 1¼ ad fere 2 poll. longa, 1–1⅓ poll. lata, basi cuneata, apice obtusa brevissime petiolulata. Petioli 1–1⅓ poll. longi, dense ferrugineo-tomentosi. Stipulæ lineari-lanceolatæ. Flores inter mediocres generis in racemos dispositi, apices versus congesti et subsessiles inferne dissiti et brevissime pedunculati, racemis terminalibus et axillaribus. Bracteæ lanceolatæ, 1½–2½ lin. longæ tomentosæ persistentes. Calyx externe dense ferrugineo-tomentosus, 3–3½ lin. longus. Vexillum late obovatum, carinæ æquilongum. Carina navicularis acuta. Legumen ignotum.

Hab. Galla Highlands, Walenso, *Dr. Donaldson Smith*, No. 213.

Stem erect, branching, evidently several feet high, covered with a dense ferruginous tomentum. Leaves trifoliolate; leaflets broadly obovate, more or less covered with white hairs on both surfaces; midrib below sometimes covered with ferruginous tomentum. Petioles in the specimens before me are nearly all erect and closely adpressed to the stem, 1–1⅓ in. long, perhaps sometimes a little longer. Flowers racemose, towards the apex densely congested. Buds covered externally with a ferruginous tomentum. Bracts lanceolate, about 1½–2½ lines long. Sepals triangular or lanceolate, acuminate. Standard about 5 lines long, broadly obovate, with a claw about 1 line long. Standard and keel about of the same length. Keel boat-shaped, with a short claw. Legume not seen.

Allied to *Crotalaria incana* L. and *C. Deflersii* Schwf., from Hodgela, Arabia, collected at an altitude of 650 metres. The stem and petioles of the Somaliland plant are covered with a ferruginous tomentum, while in *C. Deflersii* they are cinereous.

Donaldsonia Baker fil., gen. nov. (Plate 355, fig. 1). Flores hermaphroditi regulares. Sepala 5, tenuia elliptica vel ovato-oblonga obtusiuscula, æstivatione imbricata. Petala 5, lineari-oblonga obtusa quam sepala dimidio longiora, hypogyna. Stamina 5, libera petalis opposita disco prominulo exteriora cum staminodiis totidem brevibus solitariis filiformibus alternata, filamenta glabra. Antheræ elliptico-oblongæ inappendiculatæ dorsifixæ. Ovarium ovoideum dense villosum brevissime stipitatum. Stylus simplex, ovario duplo longior glaber, stigmate terminali. Ovula circiter 10–12-parietalia. Frutex. Folia imparipinnata foliolis 4–5-jugis an semper? cum impari petiolatis integerrimis. Flores creberrimi paniculatim dispositi.

D. stenopetala, sp. n. A shrub. Leaves imparipinnate, 4–5-jugate? with terminal leaflet (the leaf material is scanty). Rachis 6 in. long, with about an inch between each pair of opposite leaflets. Leaflets membranous, shortly petiolulate, glabrous on both surfaces, lanceolate or ovate-lanceolate; lateral leaflets slightly unequal-sided, base rounded, apex apiculate, margin entire, somewhat sinuate, main vein slightly prominent below, lateral veins almost at right angles to main vein, impressed below; terminal leaflet nearly 2 in. long, ¾ in. broad at broadest part, which is about one-third from the base. Flowers paniculately arranged. Peduncle and pedicels pubescent. Bracts strap-shaped, pubescent, those on the peduncle about 1½ lines long; bracteoles shorter, somewhat spathulate. Sepals membranous, imbricate, elliptical or ovate-oblong, about ¼ in. long. Petals free, 4–5 lines long, narrow, pubescent, margin somewhat irregular, in the dried state of a yellow colour. Stamens 5, about as long as the petals; filaments glabrous. Staminodia opposite to the sepals, filiform, much shorter than the fertile stamens, about 1¼ lines long. Ovary hirsute, shortly stalked; style smooth, twice as long as the ovary. Ovules anatropous.

Hab. On the north-eastern corner of Lake Rudolf, in flat open country, flowering in August, *Dr. Donaldson Smith*, No. 398.

A very curious and interesting plant. It suggests technically *Pittosporeæ*, but the anther-stamens are opposite the petals, and the leaves pinnately compound; also there is affinity with *Passifloreæ*. If the accompanying figure be compared with that of *Deidamia alata* figured by Du Petit Thouars (*Hist. Veg. Isles Austr. Afr.* t. 20), certain points of resemblance will be at once noted. The shortly stipitate ovary with parietal placentation and hypogynous stamens, and the imparipinnate leaves. The latter differs, however, in its 3–4-parted style and in the stamens being adnate to the gynophore, and in the reduced corona. In the Angolan genus *Atheranthera* we have ten stamens, five of which are sterile, and no corona; but the flowers are unisexual (see *Trans. Linn. Soc.* xxvii. 640), and the leaves simple. *Atheranthera Welwitschii* Masters, *l. c.* is identical with *Gerrardanthus Trimeni* Cogn. I have pleasure in dedicating this interesting novelty to the discoverer, Dr. Donaldson Smith; also in thanking Prof. D. Oliver for much assistance in connection with it. Mr. E. M. Holmes has suggested an affinity with *Moringa*, with which it has certainly some resemblance. It agrees in the 5 stamens alternating with 5 staminodia, and in the stipitate ovary with parietal placentation; but *Donaldsonia* differs from *Moringa* by the flowers being regular and having a decided disk, by the calyx not forming a cup at the base, and by the leaves being only simply, not compoundly, imparipinnate.

Chionothrix latifolia Rendle, sp. n. Fruticosus ramis junioribus velut foliis pedicellisque stellato-pubescentibus; foliis ovatis interdum pæne ovalibus, obtusis integris, breviter petiolatis; inflorescentia *C. somalensis* Hk. fil.; perianthii segmentis subæqualibus oblongo-ligulatis, margine membranaceis apice subcucullatis, dorso dense et longe barbato-villosis; staminibus generis; ovario subgloboso.

Hab. Shebeli, *Dr. Donaldson Smith*, Aug. 23rd, 1894.

The leaves, which reach 1½ in. in length and 1 in. in breadth, are densely covered on the lower surface with stellate hairs, sparsely on the upper. The perianth-segments are 3½ lines long, ¾–1 line broad; the stamens are 2½ lines, the style 2 lines.

Evidently closely allied to *C. somalensis*, the only species hitherto contained in the genus, but at once distinguished by its much larger ovate leaves with the dense covering of stellate hairs, unbranched hairs only occurring on those of *C. somalensis.* The perianth-segments are also shorter and broader in proportion, and of slightly more membranous texture.

Hydnora Hanningtoni Rendle, sp. n. (Plate 356). Rhizomate crasso subangulato coralliforme valde tuberculoso; floribus magnis oblongo-cylindricis, perianthii 4-fidi lobis lineari-clavatis marginibus barbatis apicem versus nudis; antheris 4 in medio tubo contiguis oblongis demum triangularibus apice rotundis; ovario cylindrico, stigmatibus 4 cruciatis.

Hab. Jordan's Nullah, Victoria Nyanza, *Bishop Hannington*, Dec. 1882. Ginia, Galla Highlands, *Dr. Donaldson Smith*, 1895.

The thick irregularly-shaped rhizome owes its coral-like appearance to the short ovoid buds by which it is densely covered; it reaches 1 in. in thickness. The flowers are smooth externally, and brown in colour (according to Bishop Hannington's sketch), 6–7 in. long, subcylindrical before opening, after which the upper part of the perianth-lobes is separate, but incurved at the tips. The perianth is 5 in. long, the diameter of the tube being a good inch, while the lobes are 2½–3 in. long, and 1¼ in. broad in the upper third. The edges for two-thirds their length from the base are reflexed and covered with short fleshy setæ; in Bishop Hannington's sketch they are pink in colour. The four anthers form a continuous four-lobed ring, attached to the perianth-tube. The ∩-shaped lobes are 1 in. high, the thick closely approximate arms ¼ in. across. The numerous pollen-sacs are indicated by transverse striation. The four ʌ-shaped stigmas are arranged in the form of a cross, crowning the ovary, which is 1½ in. long.

Is allied to the two Abyssinian species with tetramerous flowers, *H. abyssinica* A. Br. and *H. bogosensis* Becc. From the former it is distinguished by the absence of the hook on the interior of the perianth-lobes, by the clavate shape of the latter, and the short setæ on their edges. From *H. bogosensis* Becc., which I have not seen, it differs (e descript. in *Nuov. Giorn. Bot. Ital.* iii. 6) in the character of the perianth-lobes, which are lanceolate in the Abyssinian plant, and have their edges naked and only sparsely *barbato radulosis* in the middle. Dr. Donaldson Smith says the fleshy rhizome is eaten by the Somalis.

Note.—We have at the British Museum another *Hydnora* (*H. abyssinica*) from Somaliland, collected by Hildebrandt at Meid (on the Gulf of Aden), April, 1875. *H. abyssinica* has hitherto been recorded, except from Abyssinia, only from Pangani, on the east coast of Africa, nearly opposite Zanzibar (see *Die Pflanzenwelt Ost-Afrik.* th. C, p. 169).

Gillettia Rendle, gen. nov. Commelinacearum (Plate 355, fig. 2). (*Aneilematis* species, C. B. Clarke in DC. *Monogr. Phanerog.*

iii. 202.) Perianthium inferum duplici serie 3-merum; series externa calycina, interna petalina. Sepala libera, membranacea, imbricata; petala majora, distincta æqualia vel subæqualia subovalia, tenera, venulosa, marcescentia. Stamina 6, hypogyna; seriei externæ fertilia æqualia, internæ parva et ad staminodia reducta. Antheræ fertiles oblongæ, dorsifixæ, introrsum dehiscentes; filamenta glabra; pollen rotundum breviter echinulatum. Ovarium superum, sessile, columnare, trilobum, triloculare; stylus columnaris, stigmate capitato vix latiore. Ovula in loculis numerosa uniseriata anatropa. Rhizoma breve crassiusculum, cum fibris radicalibus. Folia radicalia, scapum vaginantia, late-lanceolata multinervia. Flores umbellatæ, pedicellatæ.

Species 1. Africæ tropicalis orientalis incola.

G. SEPALOSA species unica. *Aneilema sepalosum* C. B. Clarke, *l. c.*

Hab. El Modu, 70 miles west of Ganana, Somaliland, *Dr. Donaldson Smith*, March 13th, 1895. Also Kitui, in Ukamba, *Hildebrandt* 2640; east of Lake Nyassa, *Bishop Steere*; Limba Valley, S.E. Tropical Africa, *Lieut. Smith:* in Herb. Kew.

The whole plant is 4 in. high, borne on a short irregular woody rhizome; the few lowermost leaves form tubular membranous brown sheaths, surrounding the green foliage leaves, which have a blunt longitudinally veined (with 10–12 more prominent nerves) blade folded at the midrib from a short tubular amplexicaul sheath. The largest is 3½ in. long by nearly 1 in. broad. The uppermost forms a narrow-lanceolate acuminate bract (2 in. long by 4 lines broad) sheathing the flattened scape, which terminates in an umbel of about seven flowers. The pedicels elongate and reach 1½ in. when the flowers open, being sheathed below by the acuminate bracteole (1 in. long by 2 lines broad). The flower-buds are acuminate. The sepals are obviously not at the same level; the longitudinal nerves do not pass into the delicate hyaline margin, which becomes much broader below the apex; the green colour is tinged with red; they are 7 lines long by nearly 3 lines broad. The delicate finely nerved petals have become withered and twisted up in the centre of the flower, and it was impossible to restore them completely to their original size and shape; they were evidently more or less oval, with a rounded end, and nearly ¾ in. long by ⅓ in. broad. The flat ribbon-like filament is 2 lines long; the oblong anthers become slightly narrower towards the top, and are 2½ lines long. The staminodes vary slightly in length (about 1 line); the cordate head is about ½ line. The slender ovary and style are each about 2¼ lines long. The three carpels are equal. The appearance of a transverse section of the ovary indicates that dehiscence of the fruit will be loculicidal. The ovules are small and much disorganized; only in one or two cases was it possible to make out their arrangement.

I have ventured to separate this plant from *Aneilema*, as it differs in its general appearance, umbellate inflorescence, acuminate flower-buds, large sepals, large and equal fertile anthers, and apparently also in its round echinulate pollen; the pollen in every species

which I have examined being oblong or kidney-shaped, with generally a longitudinal furrow. I am indebted to Mr. Clarke for pointing out the identity of Dr. Smith's plant with *Aneilema sepalosum*, which forms the only African among a group of Indian, Malayan, and Chinese species. The genus is dedicated to Mr. F, Gillett, a member of Dr. Donaldson Smith's expedition.

Mr. Baker also finds among the Polypetalæ *Kelleronia splendens* Schinz (*Bull. Herb. Boiss.* 1895, p. 500, t. ix.), from low-lying country to the east of the Shebeli river; *Crotalaria Jamesii* Oliv., from a little to the west of the same river; *C. natalitia* Meisn., a South African species, from Sheikh Mohammed; and *Cassia adenensis* Benth. Mr. Rendle has identified *Xerophyta Schnitzleinia* Baker and *Crinum Thruppii* Baker, from between Jub River and Lake Stefanie, and *Euphorbia oblongicaulis* Baker, an Arabian plant, from east of the Shebeli river.

Plate 355.—A. *Donaldsonia stenopetala* Bak. fil. 1. Leaf. 2. Portion of inflorescence. 3. Flower. 4. Sepal. 5. Petal. 6. Flower, petals removed; *s*, stamen; *st*, staminode. 7. Stamen and staminode. 8. Longitudinal section of ovary. Figs. 1, 2, nat. size; 3–7, × 2; 8, × 5.

B. *Gillettia sepalosa* Rendle. 1. Whole plant. 2. Petal. 3. Stamen (front and side view). 4. Staminode. 5. Pollen grain. 6. Pistil. 7. Transverse section of ovary. 8. Floral diagram. Figs. 1, 2, nat. size; 3, 4, & 6, × 3; 5 & 7, more highly magnified.

Plate 356. — *Hydnora Hanningtoni* Rendle. 1. Plant bearing a flower. 2. Flower in longitudinal section. 3. Longitudinal section passing through two pairs of pollen-sacs. 4. Portion of placenta, in longitudinal section, bearing ovules. 5. A single ovule. Fig. 1, half nat. size; 2, two-thirds nat. size; 3, × 16.

ON THE BOTANICAL SUBDIVISION OF IRELAND.

By R. Lloyd-Praeger, B.E.

Thirty-seven years have now elapsed since, at a meeting of the Dublin University Zoological and Botanical Association, a paper by Charles C. Babington was read, entitled "Hints towards a Cybele Hibernica." In this communication, the author put forward a scheme for the subdivision of Ireland into twelve provinces and thirty-seven counties and vice-counties, on the plan of Watson's *Cybele Britannica;* and as the paper is not readily accessible to most botanists,* the suggested division may be reprinted here:—

XIX. South Atlantic.—113. South Kerry; 114. North Kerry; 115. South Cork.

XX. Blackwater.—116. North Cork; 117. Wexford; 118. South Tipperary.

XXI. Barrow.—119. Kilkenny; 120. Carlow; 121. Queen's Co.

XXII. Leinster Coast.—122. Wexford; 123. Wicklow.

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* It was published in the *Natural History Review*, vi. pt. 2, Dublin, 1859; and in *Proc. Dub. Univ. Zool. and Bot. Assoc.* i.

XXIII. Liffey and Boyne.—124. Kildare; 125. Dublin; 126. Meath; 127. Louth.

XXIV. Lower Shannon.—128. Limerick; 129. Clare; 130. East Galway.

XXV. Upper Shannon.—131. North Tipperary; 132. King's Co.; 133. Westmeath; 134. Longford.

XXVI. North Atlantic.—135. West Galway; 136. West Mayo.

XXVII. North Connaught.—137. East Mayo; 138. Sligo; 139. Leitrim; 140. Roscommon.

XXVIII. Erne.—141. Fermanagh; 142. Cavan; 143; Monaghan; 144. Tyrone; 145. Armagh.

XXIX. Donegal.—146. Donegal.

XXX. Ulster Coast.—147. Down; 148. Antrim; 149. Derry.

Following Watson, Babington founded his twelve provinces as far as possible on the principal river-basins of the country. Ireland does not readily lend itself to such a plan of division. The Shannon valley occupies about one-sixth of the entire island, and other river-basins are small in comparison. Also, the mountain-chains being mostly near the coast, considerable areas are drained by small rivers only. The consequence was that in many cases river-basin provinces were not practicable, and this gave an opportunity for the using of natural botanical divisions, such as Kerry and South Cork, Connemara and West Mayo, and Donegal. So that, although the partition of Ireland by river-basins is not satisfactory, nevertheless Babington's twelve provinces appear to be as good as could have been selected.

Seven years after the publication of Babington's paper, *Cybele Hibernica* appeared, under the authorship of Dr. David Moore and Mr. A. G. More. In this work the twelve provinces suggested by Babington were adopted, the only alteration being that they were called "Districts," and were numbered 1 to 12, instead of XIX. to XXX.—of which more anon. In his *British Rubi*, published three years later (1869), Babington used the twelve provinces he proposed; indeed, it was for the purpose of showing the distribution of the *Rubi* that he first undertook the botanical division of Ireland; as he himself modestly says,* "I should not have intruded myself into a work which seems especially Irish, had it not become necessary for me to subdivide the country for the purpose of recording the distribution of the Irish *Rubi*, as a part of my projected, and to a considerable extent completed, treatise upon the *Rubi* of the United Kingdom." So much for the proposed twelve botanical divisions of Ireland: they have been adopted by the leaders of Irish botany, and the large amount of botanical survey work carried out since they were first suggested has not in any way shaken our faith in their scientific usefulness and practical convenience.

Next, as regards the second part of Babington's scheme—the subdivision into counties and vice-counties. We have not yet in Ireland got so far as a *Topographical Botany*; and, although the publication of *Cybele Hibernica* marked the commencement of a large amount of field-work, this was in most cases confined to small areas, and Babington's county list lay unused, and apparently almost forgotten, till 1884, when Prof. W. R. M'Nab read before the Royal Dublin Society a "Short Note on the Botanical Topographical Divisions of Ireland," which is printed in their *Proceedings*.* This paper purports to be a revision and extension of Babington's scheme, but the suggestions put forward—the Roman numerals for the provinces, the use of the word "province" instead of "district" (which was used in *Cybele Hibernica*), the giving of names to the provinces, and the numbering of the vice-counties—all these had been already published in Babington's paper; and M'Nab's table of provinces and counties is identical with that of Babington, except that he commenced the numbering of provinces and of counties with I., and that he does not subdivide the county of Kerry.

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* "Hints towards a Cybele Hibernica," *l. c.*

No further reference to or use of Babington's county-division scheme appears until the present year, when Messrs. Groves employed it in their valuable paper on "The Distribution of the *Characeæ* in Ireland,"† in which the distribution of the species and varieties is shown in list form, on the plan of Watson's *Topographical Botany*.

For some time past a sense of the importance of commencing the large amount of field-work that must be carried out before an Irish *Topographical Botany* becomes a possibility has been steadily growing in my mind; and this led me some months ago to go carefully into the question of the most advantageous subdivision of the country into counties and vice-counties. As regards about twenty-four out of the thirty-two Irish counties, I had the benefit of at least some personal knowledge, topographical and botanical; and regarding others, I have had the great advantage of the opinions of botanists whose special acquaintance with the flora of these counties is well known. The first result of my enquiry has been the conviction that the subdivision of the larger counties as proposed by Babington can be now improved upon; and indeed this is not a matter for surprise when we consider the enormous advance made during the intervening period of thirty-seven years in our knowledge of Irish botanical topography (though that knowledge is yet very far from complete). I am also convinced that the order in which the counties and vice-counties are numbered in Babington's scheme is not the most convenient or useful one that can be devised; and in this view I am glad to have the support of several of the most practical Irish botanists. It is manifestly important that some scheme of county-division and county-numbering should be fixed once for all, according to which future records may be systematically noted. This is especially desirable at the present time, when there appears to be a distinct increase of activity as regards Irish botany, as shown not only by the work which is being done by home workers, but also by the welcome visits which we have had during the past two seasons from quite a number of the leading field botanists of England. And if any alteration is to be made in the only county-division scheme that has been put forward, then the sooner it is made the better. Since it was proposed thirty-seven years ago, the only published paper in which Babington's county-numbers have been used is that of Messrs. Groves, already quoted. The scheme, in fact, has not been generally adopted, so that no great inconvenience can result from a revision of the county list; though, if this scheme had already been used in a number of papers, it would be a question whether the inconvenience of any altération of the county-numbering would not outweigh the advantages of an improved subdivision.

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* *Sci. Proc. R. D. S.*, N.S. iv. 197 (1885).

† *Irish Naturalist*, Jan. and Feb. 1895.

These considerations have led me to put forward without further delay the following revised scheme, not without a full enquiry as to the value of each of the alterations which is suggested, and careful consideration of its desirability. It will be most convenient to give the list first, and state the reason for the changes afterwards:—

1. South Kerry.
2. North Kerry.
3. West Cork.
4. Mid Cork.
5. East Cork.
6. Waterford.
7. South Tipperary.
8. Limerick.
9. Clare.
10. North Tipperary.
11. Kilkenny.
12. Wexford.
13. Carlow.
14. Queen's County.
15. South-east Galway.
16. West Galway.
17. North-east Galway.
18. King's County.
19. Kildare.
20. Wicklow.
21. Dublin.
22. Meath.
23. Westmeath.
24. Longford.
25. Roscommon.
26. East Mayo.
27. West Mayo.
28. Sligo.
29. Leitrim.
30. Cavan.
31. Louth.
32. Monaghan.
33. Fermanagh.
34. South Donegal.
35. North Donegal.
36. Tyrone.
37. Armagh.
38. Down.
39. Antrim.
40. Derry.

It may be stated at once that this arrangement differs from that of Babington, first, as regards the subdivision of the counties of Cork, Kerry, Galway, and Donegal; and secondly in the renumbering of the counties and vice-counties according to a different plan. It will be seen that the figures ascend regularly from the extreme south-west of the country to the extreme north-east, the numbering following a backwards-and-forwards line, irrespective of the "province" boundaries.

In working out the above scheme, the following considerations influenced the subdivision of the larger counties:—

Natural Boundaries.—Where clearly-defined natural boundaries, botanical, geological, or physical, exist, it is manifestly advantageous that they should be followed; but it is not always possible to follow them, on account of other considerations. The convenience of county-divisions is so great, that, except in the subdividing of a large county, it does not appear desirable to forsake county boundaries.

Equalisation of Areas.—It is also desirable that, so far as possible, the country should be divided into portions of approximately equal area; but here again the less the arrangement by counties is disturbed the better.

Utilisation of past or future Botanical Work.—It is manifestly desirable that the scheme as regards subdivision of counties should harmonise with the subdivisions used, or to be used, in published or future county or local floras; since this will save a large amount of labour when it comes to working out the flora of each vice-county.

Nature of Boundaries.—Where a new boundary-line is required, it is desirable that it should be something conspicuous—a railway, road, or river—in order that it may easily be found in the field; an imaginary line, such as a straight line between two places, though it looks very well on a map, is often difficult to trace in the field.

Let me now take up in turn each of the cases in which the plan suggested differs from that proposed by Babington, explain the nature of the change, and give the reasons.

CORK.—Is now divided into three vice-counties (3, 4, 5), by two N.W. and S.E. lines. Babington divided it into two vice-counties, one much larger than the other, by the east and west course of the River Sullane and its continuation the River Lee. In that useful little flora, *The Flowering Plants and Ferns of the County Cork* (1883), the author, Rev. Thomas Allin, departs from Babington's boundary, and adopts instead "a line drawn along the Killarney Junction Railway from the border of Co. Kerry to Millstreet, thence running across the country in a straight line to Macroom, thence in a similar line to Bandon, and from that town, following the Bandon River, to the sea."* This line appears to have been wisely chosen, dividing the western mountainous portion of the county, with its Atlantic, Highland and American plants, from the more level tract, with its calcicole and Germanic species. The latter district (1747 square miles), being still considerably larger than the largest of the counties which it is not proposed to subdivide, is conveniently divided into two by the Great Southern and Western Railway from Charleville to Cork, and thence by the western shore of Cork Harbour to the ocean; this line forms approximately the western boundary of the Carboniferous limestone. The great county of Cork is thus divided into three parts of almost equal area, the size of each being about that of an average Irish county. As regards the division of Co. Cork, I have had the advantage of the hearty co-operation of Mr. R. A. Phillips, whose knowledge of the Cork flora is well-known, and who suggested to me the sub-division of the county adopted in this paper.

KERRY.—In Babington's scheme Kerry is divided into two vice-counties by a line following the River Flesk, the northern shore of the Lower Lake of Killarney, and the River Laune. Mr. R. W. Scully, F.L.S., whose researches in the Kerry flora readers of this Journal well know, has kindly favoured me with his views. He points out that the Dingle promontory, which Babington includes in North Kerry, belongs botanically to South Kerry; and this, indeed, Babington himself admits in his paper.* Mr. Scully also kindly informs me that, when his forthcoming *Flora of Kerry* is published, the distribution of species will probably be shown by baronies: it will therefore be an advantage to use barony boundaries in fixing the Kerry vice-counties; and the best division is evidently a line separating the baronies of Mahgunihy and Trughanacmy on the one hand from Glanarought, Dunkerron, Iveragh, and Corkaguiny on the other; this forms roughly a N.W. and S.E. line, and divides the county into a mountainous south-western part, composed of Silurian and Devonian rocks, intersected by deep bays, and rich in alpine and Atlantic plants, and a more level and less maritime north-eastern portion, composed of Carboniferous limestone, and Coal-measures. Mr. Scully agrees as to this being the best division of Kerry into two vice-counties.

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* *Op. cit.*, Introduction, p. xii.

GALWAY.—Connemara forms a division in every way distinct, and Babington's line correctly cuts off the mountainous metamorphic maritime district lying west of Lough Corrib, with its peculiar flora, from the inland limestone plain of East Galway. The latter area is so very extensive (1613 square miles, twice the size of an average county), that there can be no doubt as to the desirability of forming it into two vice-counties, and a convenient east and west dividing line is formed by the Midland Great Western Railway from Oranmore, at the head of Galway Bay, to Ballinasloe on the River Suck, the eastern boundary of the county. It may be remarked here that the Aran Islands, though part of Co. Galway, belong botanically to Co. Clare, and are so treated in *Cybele Hibernica;* and that Inishbofin, formerly included in Co. Mayo, is now a part of West Galway, to which it naturally belongs.

DONEGAL.—This large county (1870 square miles) should evidently form two vice-counties, in order to keep the variation of size of our ultimate divisions within reasonable limits, and thus ensure that a statement of the number of county-divisions in which a plant occurs in the country may be a tolerably correct indication of its area of distribution.

The boundary which I suggest is the roughly east and west line which separates the baronies of Inishowen and Kilmacrenan on the north from Raphoe and Boylagh on the south. This line crosses the Inishowen isthmus at its narrowest point, follows the shore of Lough Swilly, and then the River Swilly almost to its source, and descends to the western ocean along the course of the Gweedore River; and it divides the county into two almost equal parts.

The whole of Ireland, 32,513 square miles, is thus divided into forty portions of as nearly equal size as conditions will permit, the average area of these portions being 813 square miles. This size is almost identical with the average size of Watson's 112 vice-counties of Great Britain, which is 804 square miles.

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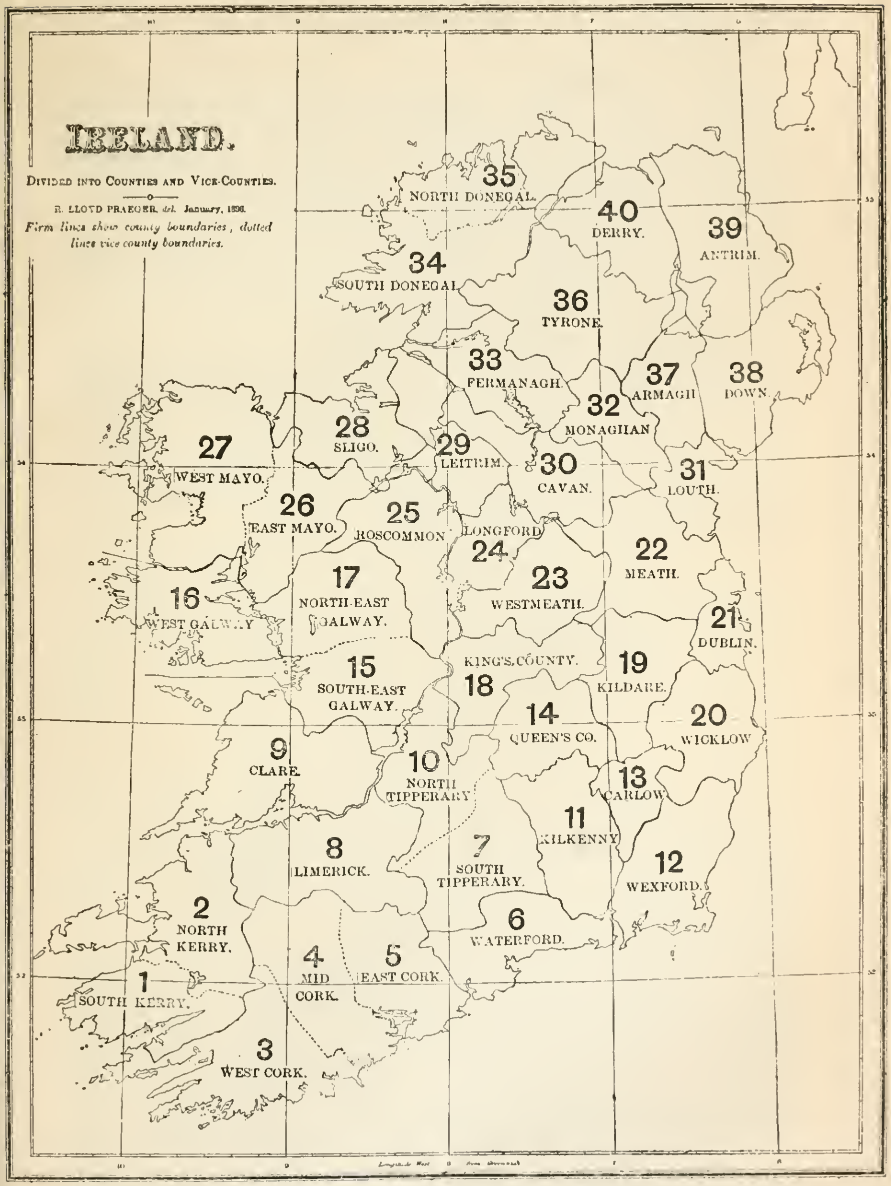
* p. 356, lines 1–3.

Next, as to the order in which the counties and vice-counties should be numbered. Watson numbered the British provinces I. to XVIII., commencing with S.W. England and ending with the extreme north of Scotland. The vice-counties he numbered in the same order, those included in Province I. being numbered 1 to 6; those of Province II. 7 to 14, and so on. Babington proposed a similar method for Ireland, but the result is not satisfactory. The Irish "provinces" are not numbered regularly from south to north, but the numbering runs first up the east coast, and then drops back into the south-west; and this absence of regular progression becomes accentuated if the vice-counties are numbered in the sequence of the provinces; when, for instance, we suddenly pass from Louth (127) 120 miles south-westward to Limerick (128). It will be generally admitted that the best scheme, and the most natural, is one which will show a regular progression from south to north—from a higher temperature to a lower: with such a system, the largeness or smallness of the numbers in the list showing the county-distribution of a species, will themselves be a key to the northward or southward range of the plant. Thus, if out of, say forty vice-counties, we find the range of a plant is from 1 to 20, we will immediately know that it is confined to the southern half of Ireland. It appears to me that the practical advantages of such a plan are much greater than those which arise from a consecutive numbering for the vice-counties of each "province"; and the scheme which I suggest therefore embodies this principle. A glance at the botanical map in *Cybele Hibernica* shows that the characteristic plants of Ireland are distributed according to lines which have a general trend north-west and south-east, rather than west and east; this is also the course followed by the isothermal lines of winter and spring; and I have adopted a system of numbering that follows these natural lines, and proceeds in a regular manner from the extreme south-west of the country to the extreme north-east. Such a plan does not prevent the vice-counties being grouped under the "provinces" if for any reason this is desired. We would then have the following table; for the "provinces" I give the numbers used by Moore and More in *Cybele Hibernica*:—

1. SOUTH ATLANTIC	1.	South Kerry.
	2.	North Kerry.
	3.	West Cork.
2. BLACKWATER	4.	Mid Cork.
	5.	East Cork.
	6.	Waterford.
	7.	South Tipperary.
3. BARROW	11.	Kilkenny.
	13.	Carlow.
	14.	Queen's County.
4. LEINSTER COAST	12.	Wexford.
	20.	Wicklow.

5. Liffey and Boyne . . .	19. Kildare.
	21. Dublin.
	22. Meath.
	31. Louth.
6. Lower Shannon	8. Limerick.
	9. Clare.
	15. South-east Galway.
	17. North-east Galway.
7. Upper Shannon	10. North Tipperary.
	18. King's County.
	23. Westmeath.
	24. Longford.
8. North Atlantic	16. West Galway.
	27. West Mayo.
9. North Connaught . . .	26. East Mayo.
	28. Sligo.
	29. Leitrim.
	25. Roscommon.
10. Erne	33. Fermanagh.
	30. Cavan.
	32. Monaghan.
	36. Tyrone.
	37. Armagh.
11. Donegal	34. South Donegal.
	35. North Donegal.
12. Ulster Coast	38. Down.
	39. Antrim.
	40. Derry.

Lastly, a word as to the numerals used to denote the districts and county-divisions. Babington numbered his first Irish province (South Atlantic) XIX., being the number following that of the last province of Great Britain (North Isles), and similarly numbered the first vice-county (South Kerry) 113; and the sequence involved in the latter has been used by Messrs. Groves in their recent paper on Irish *Characeæ*, their reason, as given in a friendly note to the writer, being that the British Isles form a natural botanical district, of which Ireland is a part. Quite so; but let us look more closely into this matter. According to Watson's arrangement, as first put forward in *Cybele Britannica*, and now universally adopted, the vice-county numbering in Great Britain commences in the Atlantic counties of Cornwall and Devon, which in all Britain have botanically the nearest affinity to the characteristic flora of Ireland; yet in the county list they are removed from the allied districts of Ireland by the whole length and breadth of England, Wales, and Scotland. The county-numbers in Great Britain led us gradually northward, from Cornwall right up to the Shetlands, and the largeness or smallness of the figures themselves thus afford a useful clue to the northern or southern range of a species; but, according to this scheme of continuous numbering, the moment we pass 112 we plunge from the almost Scandinavian flora of Shetland into the luxuriant southern flora of Killarney, thence to proceed by degrees to the more northern flora of Derry. A continuous numbering for the whole of the British Islands would be certainly a desideratum; but one which passes without a break or indication of a change from Shetland to Killarney is too unnatural to commend itself.


IRELAND.
Divided into Counties and Vice-Counties.
R. Lloyd Praeger, del. January, 1896.
Firm lines show county boundaries, dotted lines vice county boundaries.
35 NORTH DONEGAL.
40 DERRY.
39 ANTRIM.
34 SOUTH DONEGAL.
36 TYRONE.
33 FERMANAGH.
37 ARMAGH.
38 DOWN.
32 MONAGHAN.
27 WEST MAYO.
28 SLIGO.
29 LEITRIM.
30 CAVAN.
31 LOUTH.
26 EAST MAYO.
25 ROSCOMMON.
LONGFORD 24
22 MEATH.
17 NORTH-EAST GALWAY.
23 WESTMEATH.
16 WEST GALWAY
21 DUBLIN.
15 SOUTH-EAST GALWAY.
KING'S COUNTY. 18
19 KILDARE.
14 QUEEN'S CO.
20 WICKLOW
9 CLARE.
10 NORTH TIPPERARY
13 CARLOW
11 KILKENNY
8 LIMERICK.
7 SOUTH TIPPERARY.
12 WEXFORD.
2 NORTH KERRY.
6 WATERFORD.
4 MID CORK.
5 EAST CORK.
1 SOUTH KERRY.
3 WEST CORK.

Botanists will form their own opinions on this point; for my part I prefer to follow the lead set by the careful and able authors of *Cybele Hibernica*, who numbered the Irish districts 1 to 12, not XIX. to XXX.; and I have numbered the counties and vice-counties of Ireland 1 to 10.

Another point requiring a passing notice is the use of the words "province" and "district." Babington, following Watson, called the twelve Irish botanical divisions "provinces"; the authors of *Cybele Hibernica* used the term "district" instead; M'Nab proposed to return to the word "province."* Considering that Ireland is divided geographically into four provinces,—Ulster, Munster, Leinster, and Connaught,—and that in Ireland the term "province" is invariably used in this sense only, I believe its use to signify the twelve botanical divisions of the country would lead to confusion; and I follow Moore and More, who (probably on the same consideration) called them "districts."

In conclusion, I wish to acknowledge the ready and willing assistance which I received from many Irish botanists in the inquiries made for the purposes of the present paper; and I would specially offer my thanks to Messrs. N. Colgan, M.R.I.A., R. A. Phillips, R. W. Scully, F.L.S., S. A. Stewart, F.B.S.E., and Rev. C. H. Waddell, B.D., for information and for useful criticism given in correspondence or in conversation.

LICHENES ANTILLARUM A W. R. ELLIOTT COLLECTI.

Exponit Edv. A. Wainio.

(Continued from p. 36.)

Trib. 4. Pertusarieæ.

1. Pertusaria.

1. P. variolosa (Krempelh.) Wain. Étud. Brés. i. (1890), 106. Ad corticem arborum in Roseau Valley in Dominica (n. 116) et in Richmond Valley in St. Vincent (n. 241). Sine sporis. Thallus KHO—, $CaCl_2O_2$—, KHO ($CaCl_2O_2$)—. Pseudostromata KHO lutescentia, $CaCl_2O_2$—, KHO ($CaCl_2O_2$)—. Diversa est *P. variolosa* Müll. Arg. Lich. Exot. ii. (1893), 126.

2. **P. antillarum** Wain., sp. n. Thallus sat tenuis, continuus, leviter verruculoso-inæqualis, albidus aut partim stramineus vel glaucescenti-stramineus, sorediis et isidiis destitutus, KHO leviter lutescens, $CaCl_2O_2$ non reagens, sed his reagentiis unitis aurantiaco-fulvescens. Pseudostromata circ. 0·5–0·7 (–1) millim. lata, parce confluentia et –2 millim. longa, numerosissima et crebra, hemisphærica aut demum subgloboso-depressa, apice deplanata aut

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* Babington's Irish "provinces" correspond in size and importance to Watson's "vice-provinces," rather than to his "provinces," and might preferably have been numbered XXXIX. to L., in continuation of the last British vice-province (Shetland), rather than XIX. to XXX.

leviter angusteque impresso-concaviuscula, demum basi abrupta aut leviter constricta, lævigata aut leviter verrucosa, thallo concoloria et apice glaucescente et disco nigricante, apothecia 1–8 continentia, discis pseudostroma æquantibus aut leviter impressis, sparsis confertisve. Sporæ typice binæ, long. circ. 0·060–0·080, crass. 0·026–0·030 millim., halone nullo, membrana 0·003–0·004 millim. crassa, intus lævi, in eodem apothecio pr. p. solitariæ et long. 0·100 millim. et crass. 0·040 millim., intus striis transversalibus undulatæ et membrana intus incrassata. Ad corticem arboris in Kingstown in St. Vincent (n. 252).—Discus KHO rubescens. Asci iodo intense cærulescentes. Habitu subsimilis est *Pertusariæ Sommerfeltii*. A *P. leioplaca* v. *dispora* Müll. Arg. Lich. Neo-caled. (1893), 5, jam reactione thalli et sporis constanter paucis differt.

P. LEIOPLACELLA Nyl.; Wain. Étud. Brés. i. 111. Ad corticem arboris in St. Vincent (n. 452). Sporæ 8næ, partim distichæ, long. 0·045–0·060, crass. 0·026–0·030 millim., membranæ stratis duobus distinctis et modice incrassatis, striis nullis. Asci ventricosi. Pseudostromata apothecia solitaria continentia, apice umbonato, luteo.

Trib. 5. THELOSCHISTEÆ.

1. PLACODIUM.

1. P. SUBFULGENS (Nyl.) Wain. *Lecanora* Nyl. Fl. 1876, 510; Wright, Lich. Cub. ser. ii. n. 50. Ad lapides in Fort Charlotte in St. Vincent (cum *Buellia parachroa* et *Lecidea variabili* in n. 259). Pr. p. in f. dispersam transit. Hypothallus cæruleo-nigricans.

f. *dispersa* Wain. Thallo disperse areolato, areolis parvulis, circ. 0·2–0·3 millim. latis, subintegris aut parum crenatis, hypothallo tenui cæruleo-nigricante. In rupe ad Bath Estate in Dominica (n. 144), una cum *Placodio diplacioide* et *Lecanora prosecha*. *P. Mülleri* Wain. Etud. Brés. i. 120, areolis thalli majoribus crenulatisque ab hac forma differt.

2. P. AURANTIACUM (Lightf.) Tuck. Gen. Lich. 106. *P. BASSIÆ (Ach.) Wain. *Lepraria Bassiæ* (Willd.) Ach. Meth. Lich. (1803), 5. *Isidium Bassiæ* Ach. Lich. Univ. (1810) 579 (secund. specim. orig. e Malabaria in herb. Ach.). *Lecanora epiphora* Tayl. in Hook. Journ. Bot. 1847, 159 (e St. Vincent). *Callopisma aurantiacum* v. *salicinum* b. *epiphorum* Müll. Arg. Lich. Beitr. (1888), n. 1399. *Lecanora aurantiaca* v. *isidiosella* Cromb. Lich. Ins. Rodrigu. (1877), 437 (secund. descr.). Thallus citrinus aut partim albidus, isidiis brevibus tenuissimis citrinis, KHO violascentibus creberrime aut parcissime instructus. Sporæ 8næ, circ. 0·016–0·018 millim. longæ et 0·007 millim. crassæ, septa crassa. Habitu valde variabilis in *P. aurantiacum* sensim transit. Ad corticem arborum in Kingstown in St. Vincent (n. 254).

3. **P. diplacioides**, sp. n. Thallus crustaceus, effusus, sat tenuis aut crassitudine mediocris subdisperse areolatus aut partim subcontinuus lævigatus et nitidiusculus, demum sorediis farinosis passim instructus, glaucescenti-stramineus aut albido-glaucescens, KHO lutescens, hypothallo nigro inter areolas et ad ambitum visibili. Apothecia increbra et sæpe parcius evoluta, thallo innata

et dein mox elevata adpressaque, 0·8–1·0 (–1·2) millim. lata, disco plano, fusco-rufescente aut testaceo-rufo, nitidiusculo, nudo, margine simplice, crassiusculo, concolore cum disco aut rarius pallido, gonidiis destituto, persistente, discum vulgo leviter superante. Epithecium rufescens, KHO haud reagens. Sporæ 8næ, ellipsoideæ aut ellipsoideo oblongæ, decolores, long. 0·010–0·014, crass. 0·005–0·006 millim., septa crassa (circ. 0·007–0·010 millim.), poro instructa. Conceptacula pycnoconidiorum puncto fuligineo indicata. Pycnoconidia oblonga, recta, long. 0·003, crass. 0·0007 millim. Hymenium iodo persistenter cærulescens. Excipulum solum in parte inferiore gonidia continens. Hypothallus sub microscopio purpureo-fuscescens, KHO solutionem violaceam effundens. Supra rupes ad Bath Estate (n. 148) in Dominica, et ad Lomond Bay (n. 137) et Château Belair (n. 284) in St. Vincent.—Huic proxime est affinis *P. diplacium* (Ach.), quod secundum specim. orig. in herb. Ach. ab eo differt thallo esoredioso, margine thallode apotheciorum distincto, margine proprio tenuiore. In his speciebus sicut etiam in affini specie aut subspecie *L. subsequestra* Nyl. Fl. 1880, 127, epithecium KHO non reagens. Magis differre videtur *P. phæum* Tuck. Syn. North Am. Lich. ii. 146.

Trib. 6. Buellieæ.

1. Anaptychia.

1. A. podocarpa (Bél.) Trev.; Wain. Étud. Brés. i. 130, var. sorediophora Wain. Laciniæ thalli pro parte apice recurvæ et subtus sorediosæ. Ad corticem arborum in Roseau Valley in Dominica (n. 132) et ad Lomond Bay in St. Vincent (n. 152). Sterilis.

2. A. hypoleuca (Mühlenb.) Wain. *l. c.* 133. Ad corticem arboris in monte St. Andrews in St. Vincent.

Var. dendritica (Pers.) Wain. *l. c.* 134. Ad corticem arborum in monte St. Andrews in St. Vincent.

3. A. speciosa (Wulf.) Wain. *l. c.* 135. Ad corticem arborum prope Château Belair (n. 278) et Lomond Bay in St. Vincent.

2. Physcia.

1. P. alba (Fée) Müll. Arg.; Wain. *l. c.* 139. Ad corticem arboris in monte St. Andrews (1000 ped.) in St. Vincent. Sterilis.

Var. trichocarpa Wain. Apothecia inferne rhizinis brevibus albidis instructa. Ad corticem arborum in Kingstown in St. Vincent.

2. P. crispa (Pers.) Nyl. var. hypomela Tuck.; Wain. *l. c.* 143. Supra rupes ad Bath Estate (n. 501 et 151) et ad viam publicam in Roseau Valley (n. 244) in Dominica.

3. P. obscura (Ehrh.) Th. Fr. var. cycloselis (Ach.) Wain. *l. c.* 144. Ad corticem arborum in Roseau Valley (n. 128) in Dominica et ad Château Belair (n. 250) in St. Vincent.

4. P. syncolla Tuck.; Wain. *l. c.* 148. Ad corticem arboris in Roseau Valley in Dominica. Sterilis.

3. Pyxine.

1. P. Meissneri Tuck.; Wain. Étud. Brés. i. 153. Ad corticem arboris in Château Belair in St. Vincent, fertilis parce *Physciis immixta*. Thallus esorediatus, intus flavescens. Epithecium smaragdulo-fuligineum, KHO pulchre violascens. Hypothecium fuscescens, KHO non reagens. Sporæ 1-septatæ.

2. *P. connectens Wain. *l. c.* 154. Ad corticem arboris in Kingstown in St. Vincent. Apothecia primum sat diu excipulo thallode glaucescenti-albido gonidia continente instructa, demum lecideina et extus tota nigra. Epithecium smaragdulo-fuligineum, KHO pulchre violaceo-fuligineum. Hypothecium pallido-fuscescens, KHO violaceum. Sporæ 1-septatæ, fuscæ, long. 0·016–0·018, crass. 0·006–0·0065 millim. Thallus sorediis instructus, intus albus, KHO neque superne nec intus reagens.

3. P. sorediata (Ach.) Fr.; Tuck. Syn. North Am. (1882), 80. *Lecidea sorediata* Ach. Syn. Lich. (1814), 54; Nyl. Addit. Fl. Chil. (1855), 163. *Pyxine cocoës* var. *sorediata* Nyl. Syn. Lich. ii. (1885), 2. Thallus sorediis instructus, medulla in partibus junioribus alba, in partibus vetustioribus flava, KHO neque superne nec intus reagens. Ad corticem arboris in Kingstown in St. Vincent. Sterilis.

4. Rinodina.

1. R. lævigata (Ach.) Wain. *Lecanora* Nyl. Fl. 1878, 248 et 345; Wain. Adj. Lich. Lapp. i. (1881), 151. Ad corticem arborum in Roseau Valley (n. 117, pr. p.) et in Laudat (1700 ped.) in Dominica. Thallus tenuis aut parum evolutus. Epithecium fuscescens, KHO non reagens. Hypothecium pallidum, KHO non reagens. Sporæ 8næ, fuscescentes, 1-septatæ, long. 0·018–0·026, crass. 0·009–0.013 millim. Hymenium iodo persistenter cærulescens. Apothecia margine cinereo-fuscescente, disco fusco-nigro, nudo.

5. Buellia.

1. B. myriocarpa (DC.) Mudd; Wain. Étud. Brés. i. 170. Ad corticem arboris in Souffrière in Dominica (n. 121) et supra rupem in Château Belair in St. Vincent (n. 457). Hæc specimina ad formas atypicas pertinent.

2. B. parachroa Wain. Étud. Brés. i. 175. Supra rupes ad Boery River (n. 156) in Dominica et ad Fort Charlotte (n. 259, pr. p.) et alibi ad Kingstown in St. Vincent.

Trib. 7. Sticteæ.

1. Sticta.

1. S. Weigelii (Ach.) Wain. Étud. Brés. i. 189; Stizenb. Fl. 1895, Ergänz. 133. Ad corticem arborum in Layon Park (800 ped.) in Dominica (n. 221) et in Richmond Valley in St. Vincent (n. 228). *Stictina quercizans* (Del.) Nyl. Syn. Lich. p. 344 (haud Ach.).

2. **S. damæcornifolia** (Tuck.) Wain. *S. quercizans* v. *damæcornifolia* Tuck. Syn. North. Am. Lich. i. 98. *Stictina tomentosa* v.

damæcornifolia Müll. Arg. Lich. Beitr. n. 1625; Stizenb. Fl. 1895, Ergänz. 133. Thallus dichotome increbreque repetito-laciniatus, laciniis circ. 8–3 millim. latis, apicibus obtusis, axillis latis et rotundato-obtusis, marginem versus isidiis cinerascentibus instructus. Ad corticem arboris in Richmond Valley in St. Vincent (cum præcedente specie).—In hoc specimine thallus superne plumbeo- aut livido-cæsius. Cyphelloblasti læves. Habitu subsimilis est *S. damæcorni*. Gonidia nostocacea.

3. S. Dufourei Del. Ad corticem arboris in Layou Park (800 ped.) in Dominica (n. 223). Parce lecta et sterilis. Thallus margine fimbriato-laceratus, basin versus subtus sæpe costatus et substipitatus, KHO non reagens, KHO ($CaCl_22_2$) intus levissime et dilutissime rubescens. Paululum differt a speciminibus europæis, sed ad eandem speciem pertinere videtur.

Trib. 8. Pannarieæ.

1. Eriodema.

1. **E. physcioides**, sp. n. Affinis est *E. polycarpo* Fée, at ramificatione thalli et habitu subsimilis est *Physciæ setosæ* (Ach.), et thallo adpresso ab aliis speciebus differens. Thallus foliaceus, crebre laciniatus et lobatus, laciniis 3–1·5 millim. latis, adpressus, apicibus loborum adscendentibus, superne cinereus aut pallido-cinereus, tenuiter arachnoideo-tomentosus, ceterum lævigatus, subtus nudus glaberque, albidus aut albido-stramineus, margine passim rhizinis crebris, 1–0·5 millim. longis, penicillatis, nigris instructus. Apothecia in margine thalli sita, peltata et basi constricta, disco planiusculo (aut marginibus reflexis convexiusculo), fusco aut rufo, nudo, excipulo thallo concolore arachnoideo-tomentoso. Hypothecium rufescens aut partim pallido-rufescens. Hymenium circ. 0·070–0·080 millim. crassum, iodo cærulescens, ascis demum cæruleo-violascentibus. Sporæ 8næ, decolores, simplices, orculæformi-ellipsoideæ, apicibus obtusis, long. 0·015–0·012, crass. 0·007–0·006 millim. Gonidia scytonemea. Ad corticem arboris in Bowwood (900 ped.) in St. Vincent (n. 150).

2. Pannaria.

1. P. rubiginosa (Thunb.) Del.; Wain. Étud. Brés. i. 204. Ad truncum arboris in Morne Couronne in Dominica. Thallus isidiis destitutus.

f. *cinerascens* Nyl. in Cromb. Lich. Rodrigu. 436. Ad corticem arboris in monte St. Andrews (1000 ped.) in St. Vincent (n. 15). Thallus isidiis destitutus.

2. P. prolificans Wain. *P. prolifera* Nyl. Lich. Nov. Zel. (1888), 48 (haud Müll. Arg. Lich. Beitr. 1882, n. 417). *P. rubiginosa* v. *prolifera* (Nyl.) Müll. Arg. Consp. Lich. Nov. Zel. (1894), 43; Lojka, Lichenoth. Univ. n. 71 (fertilis). Thallus isidiosus (neque sorediosus, ut in *P. conoplea*). Ad corticem arborum in Roseau Valley in Dominica (n. 119) et in monte St. Andrews in St. Vincent (parcissime fertilis).

3. P. Mariana (Fr.) Müll. Arg. var. isidioidea Müll. Arg.; Wain.

Étud. Brés. i. 206. Ad truncum arboris in Morne Couronne in Dominica (n. 220).

3. Coccocarpia.

1. C. pellita (Ach.) Müll. Arg. var. parmelioides (Hook.) Müll. Arg.; Wain. Étud. Brés. i. 209. Ad corticem arboris in Morne Anglais in Dominica (n. 497).

Var. cronia (Tuck.) Müll. Arg.; Wain. *l. c.* In rupe ad Bath Estate in Dominica (n. 143).

Var. isidiophylla Müll. Arg.; Wain. *l. c.* 210. Ad corticem arboris in monte St. Andrews in St. Vincent (n. 154) et in Layon Park in Dominica.

Var. semi-incisa Müll. Arg. Lich. Beitr. n. 421. Supra rupem in Château Belair in St. Vincent.

Var. isidiosa Müll. Arg. Lich. Usambar. (1894), 264. Supra rupem in Château Belair in St. Vincent (una cum præcedente in n. 282).

Var. genuina Müll. Arg.; Wain. *l. c.* Ab hac var. *incisa* (Pers.) secund. specim. orig. in mus. Paris. apotheciis fuscis differt. Ad corticem arboris in Château Belair in St. Vincent (n. 257).

2. C. asterella (Nyl.) Wain. *l. c.* 211. Ad corticem arboris in Laudat (1700 ped.) in Dominica. Sterilis.

Trib. 9. Collemeæ.

1. Leptogium.

1. L. moluccanum (Pers.) Wain. Étud. Brés. i. 223. *L. diaphanum* Mont. (haud Sw.). Ad corticem arborum in monte St. Andrews (2500 ped.) et in Richmond Valley in St. Vincent.

2. L. tremelloides (Linn. fil.) Wain. *l. c.* 224 (haud Ach.). *Lichen azureus* Sw. Ad truncos arborum in Layon Park (800 ped.) in Dominica (n. 222) et in Monte St. Andrews (2500 ped.) et Richmond Valley in St. Vincent.

3. L. cæsium (Ach.) Wain. *l. c.* 225. *L. tremelloides* Nyl. (haud Linn. fil.). Ad corticem arborum in Morne Garu (n. 59) et in monte St. Andrews (2500 ped.) in St. Vincent.

4. L. bullatum (Ach.) Nyl.; Wain. *l. c.* 229. Ad corticem arboris in monte St. Andrews (2500 ped.) in St. Vincent.

5. L. reticulatum Mont. Syll. 378; Nyl. Syn. Lich. 124. Ad corticem arboris in Richmond Valley in St. Vincent. Sterile.

2. Psorotichia.

1. **P. americana**, sp. n. Thallus sat tenuis, effusus, rimoso-areolatus aut partim subcontinuus, areolis minutis (circ. 0·5–0·3 millim. latis), difformibus, angulosis, contiguis, planis, fusconigris, opacis, lævigatis, in lamina tenui (sub microscopio) olivaceolutescens aut aureus. Apothecia verrucas hemisphæricas formantia, disco punctiformi, urceolato-impresso, fusco-rufescente, in statu humido testaceo-rufescente aut testaceo. Hymenium circ. 0·090 millim. crassum, iodo haud reagens (lutescens), parte superiore pallescens. Paraphyses filiformes, 0·0015 millim. crassæ, sat arcte

cohærentes. Hypothecium albidum. Asci clavati, membrana tenui. Sporæ 8næ, distichæ, simplices, decolores, long. 0·012–0·008, crass. 0·007–0·005 millim., ellipsoideæ aut ellipsoideo-ovoideæ, apicibus rotundatis. Supra rupem ad Bath Estate in Dominica (n. 139), una cum *Lecanora prosecha* et *Placodio diplacioide.*

3. Thermutis.

1. T. velutina (Ach.) Fr. Syst. Orb. Veg. (1825) 302; Th. Fr. Lich. Arct. 286. *Gonionema velutinum* Nyl. Ess. Classif. (1855), 163; Syn. Lich. 88; Lich. Scand. 23, 45. Ad rupem in Château Belair in St. Vincent (n. 236). Hyphis parcis supra *Scytonema myochroum*, at sine apotheciis.

(To be continued.)

THE MOSSES AND HEPATICS OF STAFFORDSHIRE.

By James E. Bagnall, A.L.S.

Mr. Robert Garner, in his valuable and comprehensive work on *The Natural History of Staffordshire*, published in 1884, enumerates 110 Mosses and 20 Hepatics as native of the county, localising only the more rare. Many, however, of the localities given are not in Staffordshire, but in one or other of the neighbouring counties, Worcester, Derby, and Cheshire, only 65 of the mosses and 17 hepatics being localised for this county; these I have quoted in proper sequence, indicating them by the initials *R. G.* after the locality.

Finding so little had been done in the bryology of Staffordshire, I decided two years ago to take up the matter myself, and I was promised notes and assistance from some of the leading botanists of the county. Only one, however, has fulfilled this promise; this gentleman, the Rev. A. Ley, M.A., has very kindly sent me a number of specimens and notes, mostly from the Dove Dale and the Wetton Valley, which are duly quoted. I have also a few notes from Dr. John Fraser, who did some excellent work in the county years ago. With these exceptions, I am myself responsible for the following list, in which are recorded about 343 species and varieties of Mosses, and 79 of the Hepaticæ. Although this record is better than I anticipated, I believe it to be far from exhaustive; an area of some 729,000 acres can scarcely be exhaustively worked in two seasons.

Sphagnum acutifolium Ehrh. Beaudesert, Brindley Valley, Cannock Chase; Trentham; Chartley Moss; Ramshorne; Morridge Top. — Var. *rubellum* Wils. Sherbrook Valley; Brindley Valley, Cannock Chase; Chartley Moss. — Var. *elegans* Braith. Sherbrook Valley, Cannock Chase.—Var. *læte-virens* Braith. Dimmings Dale, near Alton; Chartley Moss, Star Wood, Oakamore; Brindley Valley. — Var. *patulum* Schpr. Sherbrook Valley;

Brindley Valley; Dimmings Dale; Chartley Wood; Whitmore.—Var. *subfimbriatum* Braith. Trentham Park.—*S. fimbriatum* Wils. Sherbrook Valley; Brindley Valley; Beaudesert; Chartley Moss; Dimmings Dale; Pottall Reservoir.—*S. squarrosum* Pers. Sherbrook Valley; Brindley Valley; Beaudesert; Dimmings Dale.—*S. intermedium* Hoffm. Cannock Chase; Trentham; near Leek; Morridge Top; Milford; Chartley Moss, &c.—Var. *riparium* Angst. Deep drains, Chartley Moss.—Var. *pulchrum* Lindb. Star Wood, Oakamore.—*S. cuspidatum* Ehrh. Tettensor; Morridge Top; Flash; Chartley Moss; Sherbrook Valley, &c.—Var. *falcatum* Pers. Pool near Brocton; Chartley Moss, in drains.—*S. molle* var. *tenerum* Sull. Sherbrook Valley, Brindley Valley; near Milford, Cannock Chase.—*S. subsecundum* Nees. Seckley Wood; Brindley Valley; Chartley Moss; near Cloud, &c.—Var. *contortum* Schultz. Brindley Valley; Winkshill, near Froghall; near Cloud, &c.—Var. *obesum* Wils. Star Wood, Oakamore; Brindley Valley.—Var. *auriculatum* Schpr. Seckley Wood; near Cloud; Sherbrook and Brindley Valleys; Morridge Top.—*S. papillosum* Lindb. Seckley Wood; Trentham; Oakamore; Chartley Moss.—Var. *confertum* Lindb. Chartley Moss; Brindley Valley.—Var. *stenophyllum* Lindb. Abundant, Brindley Valley.—*S. cymbifolium* Ehrh. Frequent, Sherbrook Valley; Brindley Valley; Trentham; Axe Edge End, &c.—Var. *squarrosulum* Nees. Brindley Valley; Sherbrook Valley; Tettensor; Chartley Moss; Dimmings Dale.

Systegium crispum Hedw. Banks, Stoke Meadows, *R. Garner.*

Gymnostomum rupestre Schwg. Dove Dale! *Rev. A. Ley*!—Var. *ramosissimum* Bry. Eur. Dove Dale.—*G. microstomum* Hedw. Banks near Codsall.—*G. tortile* Schwg. Dove Dale, abundant.

Anœctangium compactum Schl. Near Leek.

Weissia viridula Brid. Common, *R. G.* Hamstead, Seckley Wood, &c.—Var. *gymnostomoides* Brid. Near Leek.—*W. mucronata* Bruch. Rare, waysides near Leek.

Dicranoweissia crispula Hedw. Rocks on Cloud, *R. Garner.* Dove Dale.—*D. cirrhata* Hedw. Frequent throughout the county.

Rhabdoweissia fugax Hedw. Rare, crevices of rocks, Roaches, *R. Garner.*

Dichodontium pellucidum L. Frequent on stones in streams, in fruit, Ordesley Brook.—Var. *fagimontanum* Brid. Ellaston, Star Wood, Oakamore.—*D. flavescens* Lindb. Sandy places, Dove Dale, *R. G.* By the Dane, near Rushton, Oakamore.

Dicranella crispa Hedw. Rare; abundant on the rocks of Hamstead Canal.—*D. Schreberi* var. b. *elata* Schpr. Sherbrook Valley, drain near Biddulph; Seckley Wood.—*D. squarrosa* Schrad. Rare, Morridge Top, near Roaches; lane from Axe Edge to Hollinsclough.—*D. cerviculata* Hedw. Whitmore Bog, *R. G.* Hamstead, Morridge Top; Oakamore; Chartley Moss.—Var. *pusilla* Schimp. Brindley Valley, Cannock Chase.—*D. varia* Hedw. Hamstead; Seckley Wood, Gospel End.—Var. *tenellum* Schimp. Fields by Baggeridge Wood.—*D. rufescens* Turn. Permian Rocks, Hamstead Canal; Seckley Wood.—*D. heteromalla* Hedw. Frequent, banks and walls.—Var. *interrupta* Hedw. Abundant in drain, Brindley

Valley. — Var. *sericea* Schimp. Rocks by the Churnet, near Alton Towers, abundant.

Dicranum montanum Hedw. Rare, Seckley Wood; Swynnerton Old Park, near Trentham.—*D. flagellare* Hedw. Abundant on old palings of Blithfield Park, by River Blithe. — *D. strictum* Schleich. Near Abbots Bromley, *A. Bloxam*! Near Ingestre, *Dr. Fraser*. Abundant on old palings near Blithfield Park, near the River Blithe; abundant on stone walls, Alton Towers. I have carefully compared the specimens I received from Mr. Bloxam, and those I have myself collected, with specimens of *D. strictum* from Dr. Lindberg, and find them identical in structure, and believe I am right in thus naming the plant; in this opinion I am supported by Mr. H. N. Dixon, M.A., Mr. H. Boswell, and Mr. John Whitehead. —*D. fuscescens* Turn. Dimmings Dale, near Alton; Star Wood, Oakamore.—*D. scoparium* L. Frequent, Bagot's Park, Trentham, &c.—Var. *orthophyllum* Brid. Tettensor Common; Ramshorne, &c. —Var. *paludosum* Schimp. Sherbrook Valley, Cannock Chase. A small form with falcate leaves on trees, Trentham and Oakamore, and stone walls, Alton Towers. — *D. majus* Turn. Hamstead; Seckley Wood; Trentham; Dimmings Dale.—*D. palustre* Bry. Brit. Frequent, Bagot's Wood; Cannock Chase, &c. — Var. *rugifolium* Boswell. A marked variety, on banks, Newborough; Sherbrook Valley.

Dicranodontium longirostrum W. & M. Abundant in Trentham Park.

Campylopus flexuosus Brid. Frequent, Biddulph! Astbury, *R. G.* Swynnerton; Alton Towers, &c. — Var. *paradoxus* Wils. Ramshorne Common; Morridge Top; Oakamore; Cloud, abundant.— *C. fragilis* B. & S. Local, Sherbrook Valley; Ramshorne; Cloud; Oakamore. — *C. pyriformis* Brid. Oakamore; Hopwas; Seckley Wood, &c.

Leucobryum glaucum L. Sherbrook Valley; Beaudesert; Whitmore; Oakamore.

Archidium phascoides Brid. Hamstead Canal siding; Wren's Nest, near Sedgeley.

Pleuridium nitidum Hedw. Bagot's Wood; Hamstead Canal siding; Pottal Reservoir. — *P. subulatum* L. Sandy banks, Trentham, *R. G.*! Gospel End; Hopwas Wood; Seckley, &c.

Seligeria pusilla Hedw. Occasional on limestone rocks, Staffordshire, *R. G.*

Sphærangium muticum Schreb. Rare, fallow field at Hamstead, 1870.

Phascum cuspidatum Schreb. Fallow fields, frequent, Aldridge; Tutbury, &c.—Var. *piliferum* Bry. Eur. Rare, Weeford, with type. —*P. bryoides* Dicks. Very rare, Hamstead.

Pottia minutula Schwg. Newton Road; Rushall, Dudley Castle; Aldridge; Gospel End. — *P. truncata* L. Frequent, waysides and fallows. — *P. intermedia* Turn. Hamstead; Arley Wood; near Rugeley; near Chartley Moss.— *P. lanceolata* Dicks. Great Barr; Hamstead; Queslet.

Didymodon rubellus B. & S. Frequent, Trentham, Leek, &c.—

Var. *ruberrimus* Braith. Walls near Leek; near Caldron; Ellaston. A form with serrated leaves near Leek.—*D. luridus* Hornsch. Near Rugeley; Chillington Park. — *D. flexifolius* Dicks. Sherbrook Valley; near Leek; Dove Dale; Flash; Oakamore.—*D. cylindricus* Bruch. Limestone rocks, Weaver Hills.

Eucladium verticillatum L. Rare, Ape's Tor, near Alstonfield, *Rev. A. Ley*!

Ditrichum homomallum Hedw. Local, near Alton Towers; Gospel End Common; Roaches. — *D. flexicaule* Schwg. Alstonfield, *Rev. A. Ley*! Dimmings Dale; Mayfield; Hall Dale, Dove Dale, near Dane Bridge.—Var. *densum*. Dove Dale.

Trichostomum tophaceum Brid. Ape's Tor, *Rev. A. Ley*! Hamstead, Arley; Dove Dale; Ordesley Brook; Cloud. — Var. *acutifolium* Schpr. Sandstone rocks by Baggeridge Wood.—*T. mutabile* Bruch. Dove Dale; Hall Dale.— Var. *cophocarpa* Schimp. Dove Dale.—*T. crispulum* Bruch. Dove Dale, near Mill Dale; Hall Dale. —*T. nitidum* Lindb. Dove Dale, *Dr. Fraser*! Hall Dale! *Holmes.*

Barbula rigida Schutz. Mow Cop, *R. G.* Hamstead.— *B. ambigua* B. & S., and *B. aloides* Koch. Hamstead Canal siding.— *B. cuneifolia* Dicks. Grosty Hill, near Halesowen. — *B. marginata* B. & S. Walls, Hamstead; Rugeley; Rocester: near Cotton; Tixall; Seckley; Milford. — *B. muralis* L. Frequent on walls, &c. —Var. *æstiva* Brid. Canal sides near Colwich, on stones. — Var. *rupestris* Schultz. Alstonfield, *Rev. A. Ley*! Trentham; rocks by Baggeridge Wood.—*B. unguiculata* Dill. Frequent, Hamstead, &c. —Var. *cuspidata* Bry. Eur. Sedgeley; Trentham.—Var. *obtusifolia* Schultz. Banks near Oakamore.—*B. fallax* Hedw. Near Alstonfield, *Rev. A. Ley*! Seckley, Kingswinford, &c. — Var. *brevifolia* Wils. Ape's Tor, *Rev. A. Ley*! Oakamore; Belamont.—*B. reflexa* Brid. Rare, Axe Edge End. — *B. rigidula* Dicks. Near Alstonfield, *Rev. A. Ley*! Dudley Castle; Weaver Hills. — *B. spadicea* Mitt. Cotton; Abbot's Bromley; Dove Dale; Flash; Oakamore. — *B. cylindrica* Tayl. Wetton, *Rev. A. Ley*! Seckley; Arley; Trentham; Hayhead. — *B. vinealis* Brid. Hamstead, Milford; Arley; Norbury.—*B. Hornschuchiana* Schultz. Hamstead; Alton Towers; Shatterford.—*B. revoluta* Schwg. Arley; Norbury; Leek; Dove Dale.—*B. convoluta* Hedw. Canwell; Barr Common; Roaches, &c.—*B. tortuosa* L. Caldron; Weaver Hills; Dove Dale; Wetton; Mill Dale.—*B. Brebissoni* Brid. Tree roots by Severn, near Arley. *B. subulata* L. Haughton; Axe Edge End; Weaver Hill, Hall Dale, &c.— *B. lævipila* Brid. Rare. Tree-roots, banks of Severn, Arley.— *B. latifolia* B. & S. Near Arley; Alrewas; King's Bromley; Tutbury, &c. — *B. ruralis* L. Frequent, Kingswinford; Hall Dale, &c. — *B. intermedia* Brid. Frequent on limestone, Weaver Hills, Ramshorne, Hall Dale, &c.

Ceratodon purpureus L. Frequent.—Var. *paludosa* Bagnall. On tree-roots by the Trent, King's Bromley, abundant. — *C. conicus* Lindb. Rare. In fruit, Axe Edge End; rocks near Cloud.

Encalypta vulgaris Hedw. Dove Dale; Cotton; Ramshorne; Norbury; Baggeridge.—Var. *obtusifolia* Funck. Dove Dale; near Baggeridge Wood. — Var. *pilifera* Funck. Mill Dale; Dove Dale;

Hall Dale. — *E. streptocarpa* Hedw. Frequent on stone walls; Wren's Nest; Arley Wood; Alton Towers, &c.

Grimmia apocarpa L. Frequent on walls and rocks. Seckley Wood, Kinfare, &c. — Var. *gracilis* N. & H. Rocks by the Severn, Arley. — Var. *rivularis* Brid. Boulders in Severn, Arley; River Hamp's Water-houses; Dove Dale.—Var. *pumila* Schp. Axe Edge End. — *G. pulvinata* Dill. Throughout the county. — Var. *obtusa* Brid. Rare, Ramshorne Common, Cotton, Rushton. A very small fruited form is abundant on stone walls, Ellaston, Rushton. — *G. trichophylla* Grev. Wall-tops, Morridge Top, Axe Edge End; Cotton; Biddulph, Ordesley. — *G. ovata* W. & M. Lane from Ramshorne to Alton Towers.

Racomitrium aciculare L. Local. Mow Cop; Roaches, *R. G.* Limestone rocks, Dove Dale! *Rev. A. Ley.* Stream near Flash; River Dane, near Dane Bridge.—Var. *denticulatum* B. & S. Stream near Flash, with the type. — *R. heterostichum* Hedw. Walls near Tettenhall; Wrottesley. — Var. *alopecurum* Huebn. Wrottesley; rocks above Quarnford; near Froghall. — *R. fasciculare* Schrad. Mow Cop; Roaches, *R. G.* Walls near Tettenhall; Axe Edge End; near Dane Bridge; boulder, Chillington Park. — *R. lanuginosum* Hedw. Dove Dale! *R. G.* Axe Edge End; near Flash; Oakamore; Alton; Weston Park.—*R. canescens* Hedw. Mow Cop; Roaches!, *R. G.* Alton; Ramshorne; Flash. — Var. *ericoides* Schrad. Blackheath; near Froghall.

Ptychomitrium polyphyllum Dicks. Mow Cop; Dove Dale! *R. G.* Tettenhall; walls near Seckley Wood.

Zygodon viridissimus Dicks. Rare, walls near Barton-under-Needwood; Arley Wood. — *Z. Stirtoni* Schpr. Dove Dale, *Rev. A. Ley*!

Ulota crispa Hedw. Trentham; Dove Dale; Wetton, *R. G.*

Orthotrichum cupulatum Hoffm. Trentham; Cheddleton, *R. G.* In river, Manifold, near Wetton, *Rev. A. Ley*! Dove, Dove Dale.—Var. *nudum* Dicks. Weaver Hills. — *O. anomalum* B. & S. Hill above Caldon; Dove Dale.—*O. saxatile* Brid. Hill above Caldon; Dove Dale; Mill Dale; Weaver Hills. — *O. affine* L. Dove Dale; tree-roots by the Trent, near Barton; banks of Severn, near Arley; Seckley Wood. — *O. Lyellii* H. & T. On willow-trunk by the Severn, Areley. — *O. stramineum* Hornsch. Tree-root, Dove Dale, *Rev. A. Ley*!—*O. diaphanum* Schrad. Stoke-on-Trent, *R. G.* Trees by the Trent, Alrewas. — *O. Sprucei* Mont. Rare, tree-roots and trunks by Severn, Arley. — *O. rivulare* Turn. On boulders in the Severn by Seckley Wood; Dove, Dove Dale.

Splachnum ampullaceum L. Bog above Hednesford; Alsager Heath, *R. G.*

Ephemerum serratum Schreb. Field at Hamstead; Great Barr.

Physcomitrella patens Hedw. Hamstead; pool in Tixall Park; Pottal Reservoir, abundant.

Physcomitrium sphæricum Schwg. Very rare, Pottal Reservoir, with *Elatine hydropiper*, hitherto recorded from Cheshire only, as British. — *P. pyriforme* L. Stoke, *R. G.* Aldridge; Hamstead; Pottal, &c.

Funaria fascicularis Dicks. Hamstead; Queslet; Aldridge.—*F. calcarea* Wahl. (*F. Muhlenbecki* R. G.). Dove Dale! *R. G.* Lane from Mill Dale to Ilam.

Bartramia pomiformis L. Frequent on banks, Hamstead; near Stone, &c.

Philonotis fontana L. Flash; Cannock Chase; Rushton; Chartley, &c. — Var. *cæspitosa* Wils. Footways, Newborough; Cannock Chase; Morridge Top; Rushton Marsh; Chartley. — *P. calcarea* B. & S. Sherbrook and Brindley Valleys, Cannock Chase.

Breutelia arcuata Dicks. Dove Dale, *Valentine*. Mill Dale, abundant.

Orthodontium gracile Wils. Very rare, rock by the Churnet, near Alton Towers, c. frt.

Leptobryum pyriforme L. Whitmore, *R. G.* Alton, Tixall; Ellaston; Penn Common; Norbury Park.

(To be continued.)

THE LATE LORD DE TABLEY.

John Byrne Leicester Warren, third and last Baron De Tabley, was born at Tabley Hall, near Knutsford, Cheshire, on April 26th, 1835. He was educated at Eton and Christ Church, Oxford, taking his M.A. degree in 1856. In 1860 he was called to the bar, and in 1871 took up his residence in London. He succeeded to the title in 1887.

His many qualifications in the direction of literature and art are sympathetically recorded in the *Athenæum* for Nov. 30th, 1895, by Mr. Theodore Watts, and in the *Contemporary Review* for January, 1896, by Mr. Edmund Gosse, who describes him as "a scholar of extreme elegance, a numismatist and a botanist of exact and minute accomplishment, the shyest of recluses, the most playful of companions, the most melancholy of solitaires, above all and most of all, yet in a curiously phantasmal way, a poet." These writers enjoyed Lord De Tabley's intimate friendship—a somewhat rare privilege, for he was by nature a recluse, and as a consequence was intensely sensitive, and easily pained by the real or fancied want of sympathy of those with whom he came in contact. The papers I have mentioned have done justice to his literary attainments; but the only attempt to present him as a botanist is that of his friend Sir M. E. Grant-Duff, whose letter in the *Spectator* of December 7th supplements in other respects the notices of Messrs. Gosse and Watts. It is this aspect of Lord De Tabley's varied attainments which demands record in the pages of this Journal, in which the results of his work among British plants have for the most part been published.

The period during which Warren occupied a prominent position among British critical botanists extended from 1869—when he published in this Journal his "Account of Cheshire Rubi"—to 1877, when he contributed his "Notes on Sussex Plants": these two papers are excellent examples of his thorough painstaking method of work. But long before this he had been investigating the flora of his native county. In the first paper mentioned he speaks of "trying some years ago to make a list of Cheshire plants,"* and of having "left brambles to the last"; and Mr. Watson, in the 'Compendium' of the 'Cybele,' mentions a "carefully drawn up MS. Flora of Cheshire, lent to me by Mr. Warren in 1867": this, unfortunately, was never published, although a list of queries connected with it was issued in 1873, with an intimation that the Flora was likely to appear shortly. He helped considerably in the preparation of the *Flora of Middlesex* (published in 1869), Mr. Newbould being frequently his companion in collecting. After 1877, although his general interest in British plants continued, it had ceased to be absorbing, and he published nothing. In 1864 he became a Fellow of the Linnean Society, but withdrew after a few years.

Of his enthusiasm for botany during the period indicated, Sir M. E. Grant Duff gives an amusing instance. I remember, too, how, when standing for Mid Cheshire in the Liberal interest in 1868, he combined his canvassing with plant collecting. Mr. Robert Holland, with whom I was staying at that time, was one of his electioneering agents, and the two found at least as much common ground in botany as in politics, in which, to say the truth, Holland took but little interest. Sir Grant Duff says:—

"The same remarkable powers of observation which enabled him to become a good Greek numismatist, made him one of the most accurate of amateur English botanists. I use the word 'amateur,' because he never published the *Flora of Cheshire*, at which he worked for a very considerable time; but I am quite aware that his attainments in his favourite science were such that I might, with the approval of many, have claimed for him a higher place. He never ceased to jest about the want of appreciation with which his botanical studies were looked upon by most of those with whom he came in contact. He used to relate, for example, with great glee, that, while he was compiling the Flora of his county, he one day observed that he had just time, after coming off duty with his yeomanry, to find a particular plant of which he was in search. Fully accoutred as he was, he hailed a street-carriage, jumped into it, and told the driver to go to a point in the immediate environs of Chester. Arrived at the spot indicated, he got out, searched along a ditch, found his plant, and directed the man to return. He did so; but, stopping in front of a large building, turned to his fare, and said, 'That, sir, is the asylum.' The soul of kindness, he never laughed at any one save himself; but that he did very frequently. I take the following from a letter written to me, just before I left Madras:—

"'I have opened the slip containing *Ficus Trimeni* with awe and reverence. I did not actually go down on my knees, as Linnæus did on seeing the furze in full bloom, but I had some difficulty in preserving that upright position which is the privilege and distinctive mark of the *primates*. I did not expect a new fig to be invented. But science is great, and advances in the most unexpected directions. And yet the *Ficus* suggests painful memories. My dear friend, it is a sad subject, but there was once in the British flora a *Rumex Warrenii*. How pathetic is that "once."! My infant was found—not precisely in the bulrushes, but near them, duly christened by Trimen, and registered in the *Journal of Botany*.* All went well for a time; but one of those infernal German professors, who know everything and several matters besides, wrote that he had found the child in Silesia, or God knows where, and had already christened it *Rumex Knafii*, after some detestable Knaf! and so it had to be, and you may read in Hooker's *Student's Flora*, last edition, under *Rumex maritimus*, the sad history how *Rumex Warrenii* is now *Knafii*. Ah, those Germans! they will quietly come and annex the lot of us some day.'"

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* "During a former residence in Cheshire, I made a careful list, through many years, of every species found within a mile radius of my dwelling-place." Journ. Bot. 1871, 228.

The mention of this *Rumex* recalls the other critical genus for which Warren showed a marked preference, as is indicated by his having a bramble and a dock—*Rumex maximus*, Schreb., which he practically added to the British flora†—engraved on his book-plate.‡ He collected numerous *Rubi* for the Botanical Exchange Club, to the Reports of which he contributed valuable notes; and presented many to the British Museum Herbarium, to which he was at that time a frequent visitor. Among other critical genera to which he paid considerable attention may be mentioned *Bromus*, *Triticum* (*Agropyrum*), and *Callitriche*; of the last of these he described a new species, *C. Lachii* § (now referred as a variety to *C. obtusangula*), which finds no place in Mr. Jackson's *Index*, but is published in the Report of the Botanical Exchange Club for 1875, p. 17 (1876).

His Flora of Hyde Park and Kensington Gardens, printed in this Journal for 1871, is a remarkable contribution to local botany. The scope of his work, however, will best be gathered from the list of papers which is appended to this notice: it is hardly too much to say that there is no one of them which is not instructive and suggestive.

Warren's principal fellow-workers were Dr. Trimen, Mr. J. G. Baker, Mr. F. M. Webb (whom he engaged for a time to help in the Cheshire Flora), and Mr. R. A. Pryor; Mr. Newbould was at once his mentor and his admirer,|| and he was on terms of intimacy with Mr. H. C. Watson: from which it will be seen that he was associated with the best critical English botanists of his period. During the later years of his life he kept up an acquaintance with Mr. Baker, but his retiring disposition and his waning interest in botany separated him from such of his former associates as had not been removed by distance or death. "The most recluse of men,"

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* *Rumex maritimus* forma (hybrida?) *Warrenii*, Trimen in Journ. Bot. 1874, 161, t. 146.

† See Journ. Bot. 1874, 34.

‡ Warren published, in 1880, 'A Guide to the Study of Book-plates'; his own book-plate was designed and presented to him by Mr. W. Bell Scott, who was also a collector of these trifles.

§ The name refers to the Lach Eye meadows, near Chester, where Warren found the plant.

|| Warren makes this characteristic reference to Newbould: "Borrer is known best at second-hand. In this respect he resembles Socrates, and an acute botanist of the present day who has inherited the reticence of his master." Journ. Bot. 1877, 193.

says Sir Grant Duff, "he often hardly saw his dearest friends for long periods of time. I remember that in the later seventies it used to be said:—'Warren has two intimate friends. The first he has not seen for five years, the second for six.' It was not quite true; but it had a certain basis in fact."

Never very strong, he was the victim of more than one attack of influenza, and from the last of these, in the winter of 1894–5, he never thoroughly recovered. He went to Ryde in the autumn of last year, and had planned to spend the winter with his sister, Lady Leighton, at Bournemouth. But this intention was never carried out: he died at the former place on Nov. 22nd, and was buried at Lower Peover, Cheshire. "Earth from the Holy Land was sprinkled over him, and the grave was filled up with clods from a certain covert where he had loved to botanize."*

James Britten.

List of Botanical Papers.

"Some account of Cheshire Rubi." Journ. Bot. 1869, 353-360

"On the 'Species' question as regards Rubus." Journ. Bot. 1870, 1–4.

"Callitriche autumnalis in Cheshire." Ib. 88.

"On the Dumetorum Group of Rubi in Britain." Ib. 149–154, 169–176.

"Lepigonum neglectum as an inland plant." Ib. 252.

"A Note for the 'Middlesex Flora.'" Ib. 255.

"Notes on the 'Compendium of the Cybele Britannica.'" Journ. Bot. 1871, 6–9.

"Stratiotes aloides in Central Cheshire." Ib. 215.

"The Flora of Hyde Park and Kensington Gardens," Ib. 227–238.

"*The Flora of Liverpool*" (Review: signed with initials). Journ. Bot. 1872, 314–316.

"Middlesex Plants." Journ. Bot. 1873, 208.

"Rumex sylvestris." Ib. 340.

"Notes on a projected Cheshire Flora." (Privately printed, 1873).

"New station for Wolffia arrhiza." Journ. Bot. 1874, 306.

"Callitriche obtusangula in West Sussex." Ib. 307.

"On Triticum pungens." Ib. 357–363.

"Rumex maximus." Journ. 1875, 6, 7.

"On some doubtful species in the Cheshire Flora." Ib. 163–167.

"London Botany." Ib. 178, 276.

"The Growth of the two Sea Couch-Grasses." Ib. 295.

"Kensington Gardens Plants." Ib. 336.

"Atriplex rosea in Sussex." Ib. 376.

"Luzula campestris in Kensington Gardens." Journ. Bot. 1877, 135.

"Notes on some Sussex plants." Ib. 193–199.

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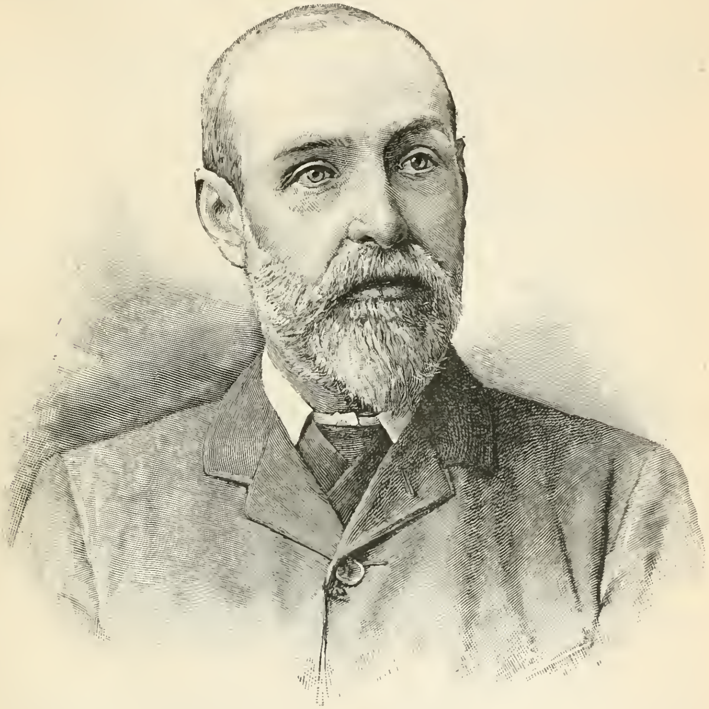
* *Contemporary Review* Jan. 1896, p. 87.

MR. GEORGE NICHOLSON.

By the courtesy of the Editor of the *Garden* we are enabled to reproduce the very excellent portrait of the Curator of Kew Gardens, to whom the last volume is fittingly dedicated. British botanists have reason to regret that the cares of office have so absorbed Mr. Nicholson's time that he has been unable of late years to continue the investigation of our Flora which he was at one time prosecuting with so much enthusiasm; our own pages have borne abundant evidence of his capability in that direction.



As "the distinguished practical head" of Kew Gardens—to quote the *Garden* notice—Mr. Nicholson has done much to improve the disposition of the collections under his care. He has been associated with Kew since 1873, when he became clerk to the Curator of the Gardens, and in 1886 he was promoted to the post rendered vacant by the death of Mr. John Smith. "The ideal curator of such an establishment as Kew," says Mr. Robinson, "must be a man of varied acquirements, both practical and scientific; he must also possess considerable administrative ability. Mr. Nicholson is probably the nearest approach to this ideal that Kew has possessed since Aiton's time." His special department is the arboretum; and we are indebted to him for the first instalment of the *Handbook of Trees and Shrubs* grown at Kew, which was noticed in this Journal for 1895 (p. 29), and the completion of which is much to be desired. The long-needed Guide to the Gardens, the absence of which has formed the subject of inquiries in Parliament during the last five years, will doubtless owe much of its value to Mr. Nicholson's knowledge. His principal work is *The Dictionary of Gardening*, a standard book of reference.

Mr. Nicholson was born (at Ripon) in 1847, so we may expect from him many more years of useful work.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from vol. xxxiii. p. .)

Luzula Forsteri DC. Fl. Fr. iii. 160 (1805). **1804.** "Mr. Edward Forster first observed this in 1795 . . . between Hog hill and Collier-row in Hainhault Forest, Essex."—E. B. 1293, and Sm. Fl. Brit. iii. 1395. A note on the original drawing for E. B. says, "First observed in 1790."

L. vernalis DC. Fl. Fr. iii. 160 (1805). *L. pilosa* Willd. Enum. 393 (1809). **1597.** "In woods . . . or shadowie places."—Ger. 17.

L. maxima DC. Fl. Fr. iii. 160 (1805). **1670.** "I observed it plentifully in the ditch of a close adjoyning to Hampsted-wood near London."—Ray Cat. 149.

L. arcuata Wahlenb. in Summ. Veg. Scand. 13 (1814). **1824.** "Summits of Cairngorum and others of the Grampian mountains. Prof. Hooker."—Sm. Engl. Fl. ii. 183.

L. spicata DC. Fl. Fr. iii. 160 (1805). **1787.** "On the very summit of Ben Lomond. Dr. J. E. Smith."—With. Bot. Arr. ii. 365.

L. campestris DC. Fl. Fr. iii. 161 (1805). **1597.** "In watery ditches . . . going from Paris garden bridge to Saint Georges fields," London.—Ger. 16.

L. erecta Desv. Journ. Bot. i. 156 (1808). *L. multiflora* Lej. Fl. Spa, 169 (1811). **1660.** "Gramen hirsutum majus panicula juncea compacta."—R. C. C. 68. Ray Hist. ii. 1291, &c. Formerly generally described as a var. of *L. campestris*, but as a separate species in Forster's Fl. Tonbridg. (1816).

Typha latifolia L. Sp. Pl. 971 (1753). **1548.** "Groweth in fennes & water sydes among the reedes. . . . It is called in englishe cattes tayle or a Reedmace."—Turn. Names, G vij.

T. angustifolia L. Sp. Pl. 971 (1753). **1670.** "Typha palustris media J. B. . . . . vidi in rivulo quodam juxta ædes Nobiliss. Comitis Warwicensis *Leezhouse* dictas in Essexia."—Ray Cat. p. 308.

Sparganium ramosum Huds. Fl. Angl. ii. 401 (1778). **1562.** "Comon in England."—Turn. ii. 143.

S. neglectum Beeby in Journ. Bot. 1885, 193. **1885.** Found by Mr. W. H. Beeby "in October, 1883, at Albury Ponds, near Guildford, Surrey."—Journ. Bot. 1885, 26, 193.

S. simplex Huds. Fl. Angl. ii. 401 (1778), **1597.** "Common throughout England."—Ger. 41.

S. affine Schinzl. in Flora, 1845, 670. **1851.** "In lakes, Island of N. Uist, and Galloway, Scotland; Snowdon."—Bab. Man. ed. 3, 338; see also Bot. Gaz. iii. 158.

S. minimum Fr. Summa, ii. 560 (1849). **1666.** "On the East side of Scrooby nigh a great Wood where the foot way is cast up Nottinghamshire."—Merrett, 115.

Arum maculatum L. Sp. Pl. 966 (1753). **1548.** "Groweth in euery hedge almost in Englande about townes in the spryng of the yere."—Turn. Names, B ij, back.

A. italicum Mill. Dict. ed. viii. (1768). **1854.** Discovered by Dr. Bromfield and Mr. Albert Hambrough in the Undercliff, Isle of Wight.—Phytol. v. 194.

Acorus Calamus L. Sp. Pl. 324 (1753). **1666.** "Found by Dr. Brown neer Lyn, and by Mr. Brown of Oxford, near Hedly in Surry."—Merrett, 2. "In fluvio Yare prope Nordvicum [Norwich] à cl. viro D. Thos. Brown M.D. primum observatus, nobisq. ante decem annos ostensus fuit."—Ray Cat. 7 (1670).

Lemna trisulca L. Sp. Pl. 970 (1753). **1597.** "I found it once in a ditch by Bermondsey house neer to London and never elsewhere."—Ger. 681.

L. minor L. Sp. Pl. 970 (1753). **1562.** "Well knowen in England and specially of them that have pondes."—Turn. ii. 33, back; but see 'Libellus' and 'Names,' under *Lens palustris.*

L. gibba L. Sp. Pl. 970 (1753). **1778.** "L. minor β. gibba."—Huds. ii. 399. "Lower Bishop's pool, Northwick, near Worcester, and in a pool near the east side of Malvern Chace, Worcestershire, Sept. 8, 1776."—Stokes in With. Bot. Arr. ed. 2, p. 1020 (1787).

L. polyrrhiza L. Sp. P. 970 (1753). **1724.** "In fossis et aquis purioribus passim occurrit."—Ray Syn. iii. 129.

Wolffia Michelii Schleid. Beitr. 233 (1844). **1866.** In "a pond near Staines Common, Middlesex."—Dr. Trimen in Journ. Bot. 1866, p. 219.

Alisma Plantago-aquatica L. Sp. Pl. 342 (1753). **1597.** "About the brinkes of rivers, pondes, and ditches almost everywhere."—Ger. 338. Figure only, Turn. ii. 94 (1562).

A. ranunculoides L. Sp. Pl. 343 (1753). **1633.** "I found [this] in the companie of Mr. Willm. Broad and Mr. Leonard Buckner in a ditch on this side Margate in the Isle of Tenet."—Johnson, Ger. em. 417.

Elisma natans Buchenau in Pringsheim, Jahrbuch, vii. 25 (1869). **1732.** "In the great lake below the old castle at Llanberys; Mr. Brewer."—Martyn's Tournefort, i. 17. Samuel Brewer's MS. account of his journey in Wales in 1726 (in Bot. Dept. Brit. Mus.) contains the following:—"July 21. I took a walk down to the meadows below the old castle, and in the great and lower moss lake towards Carnarvon met with . . . . Bur flag with a small long narrow leaf swimming upon the water, and a plant with a white 3 leaved flower with fruit shaped like a narrow purslain leaf on the top, the under leaves like *Subularia* in shape, though not tubulous or jointed as *Subularia* is."

Sagittaria sagittifolia L. Sp. Pl. 993 (1753). **1570.** "In Anglia prope Oxonium prope mœnia, . . . etiam Londini ad arcis Regiæ vallum, & in Tamesis crepidinibus palludosis." — Lob. Adv. 126.

Damasonium stellatum Pers. Syn. i. 400 (1805). **1633.** "I found [it] a little beyond Ilford, in the way to Rumford, and Mr. Goodyer found it also growing upon Hounslow Heath."—Ger. em. 417.

Butomus umbellatus L. Sp. Pl. 372 (1753). **1570.** "In lacuniis & torpidis aut lente fluentibus rivulis Belgiæ, Angliæ, &c. Londini ad arcem Regiam casteriumque navium, hibernicarum nascitur."—Lob. Adv. 44.

Triglochin palustre L. Sp. Pl. 338 (1753). **1597.** "Gramen aquaticum spicatum. In mirie and muddie grounds."—Ger. 12. "Tamworth."—Withering, Bot. Arr. ed. 2, 378 (1787).

T. maritimum L. Sp. Pl. 339 (1753). **1597.** "In marish and waterie places neere to the sea."—Ger. 21. "Near Yarmouth, Mr. Woodward."—With. Bot. Arr. ed. 2, 378 (1787).

Scheuchzeria palustris L. Sp. Pl. 338 (1753). **1807.** "Discovered by the Rev. [James] Dalton in June, 1787, growing abundantly in Lakeby Car, near Borough-bridge, Yorkshire."—E. B. 1801. Sowerby's MS. note on the drawing gives the date of finding as June, 1807.

Potamogeton natans L. Sp. Pl. 126 (1753). **1597.** "In pooles, ponds," &c.—Ger. 675. ["Potamogeton—Pond Plantayne." —Turn. Names, F v.].

P. polygonifolius Pourr. in Mem. Acad. Toul. iii. 325 (1788). **1829.** Lindley, Syn. Brit. Flora, 250. "*P. oblongus*," with syn. "*polygonifolius*." "Ditches near Horsfield (Sussex). Mr. D. Turner."—Hook. Fl. Brit. ed. 1, 76 (1830). [? "P. natans, var. 2. Boggy ground on Birmingham Heath."—With. Bot. Arr. ed. 2, 172 (1787).]

P. fluitans Roth, Tent. Flor. Germ. i. 72 (1788). **1885.** Ramsey, Hunts; found by Mr. Alfred Fryer.—Bot. Exch. Club Rep. 1884, 111 (1885).

P. coloratum Hornem. ap. Fl. Dan. t. 1449 (1813). *P. plantagineus* Du Croz (1818). **1839.** "Ditches at Ham ponds near Sandwich, Kent. W. Wilson Saunders."—Ann. N. H. ii. 349. First found [in Cambs] in 1827 by Rev. L. Jenyns (Blomfield).—Bab. Fl. Cambs. 248.

P. alpinus Balbis, Misc. Bot. 13 in Act. Turin. 329 (1804). *P. rufescens* Schrad. (1815). **1804.** "Found in the river at Scole, Norfolk, by Mr. Woodward and Mr. Turner," &c.—E. B. 1286 ("P. fluitans").

P. sparganifolius Læstad. ex Fries, Nov. Fl. Suec. Mant. i. 9 (1832). **1856.** "In the river at Maam, Galway. Mr. T. Kirk." —Bab. Man. ed. 4, 351.

P. Lonchites Tuckerm. in Am. Journ. Sc. Ser. 2, vi. 226 (1848). **1869.** "In the river Boyne below Navan. Mr. D. Moore."—Syme, E. B. ix. 33; but I am informed by Mr. Arthur Bennett that the Irish plant is a form of "*gramineus* L.," i. e., *graminifolius* Fries.

P. lanceolatus Sm. E. B. 1985 (1809). **1809.** "Communicated by the Rev. H. Davies [Aug. 1808] from the lakes of North Wales."—E. B. *l. c.*

P. heterophyllus Schreb. Spicil. Fl. Lips. 21 (1771). **1798.** "Ditches near Beverley" (Yorkshire).—Mr. Teesdale in Linn. Trans. v. 43 ("P. palustre").

P. nitens Web. Fl. Holsat. Suppl. n. 11 (1787). **1864.** Discovered by D. Moore "in a large lake at Castle Gregory, near Brandon Mountain, Co. Kerry" (1864).—Journ. Bot. 1864, 326.

P. lucens L. Sp. Pl. 126 (1753). **1633.** "Potamogeiton longis acutis foliis."—Ger. em. 822, 4. "In Thames between Fulham & Hampton Court."—Petiver in Gibson's Camden (1695).

P. decipiens Nolte ex Koch, Syn. Fl. Germ. ed. 2, 779 (1844). **1867.** Found in the canal at Bath by Mrs. Hopkins.—Bot. Exch. Club Report, 1866, 13; and Journ. Bot. 1867, 71.

P. Zizii Koch ex Roth, Enum. Pl. Germ. i. 531 (1827). **1879.** Found in Cauldshields Loch, near Melrose, N.B., by Mr. A. Brotherston.—Bot. Exch. Club Report, 1878, 19 (1879); and Journ. Bot. 1879, 252.

P. coriaceus Fryer in Journ. Bot. 1889, 8. *P. lucens coriaceus* Nolte in Roehl. Deutschl. Fl. i. 850 (1823). **1886.** "Last year Mr. A. Fryer sent specimens from Cambridgeshire."—Arthur Bennett in Journ. Bot. 1886, 223.

P. salicifolius Wolfg. in Schult. Mant. iii. 355 (1827). **1877.** Found by Rev. Augustin Ley, in 1866, in the Wye, Sellack, Herefordshire.—See Bot. Exch. Club Report, 1877, p. 10. The *P. salicifolius* of Bab. Man. ed. 7, 372, is not this species.

P. Griffithii Ar. Benn. in Journ. Bot. 1883, 65. **1883.** Discovered by Mr. J. E. Griffith in Aber Lake, Carnarvonshire, June, 1882.—Journ. Bot. *l. c.*

P. prælongus Wulf. in Roem. Arch. iii. 331 (1805). **1835.** "Lakes and pools, Berwickshire, Dr. Robt. Thomson. Moss of Litie, Nairnshire, Mr. J. B. Brechan [Brichan]."—Hook. Fl. Brit. ed. 3, 77. Mr. Brichan found it in 1832: see Phyt. i. 237.

P. perfoliatum L. Sp. Pl. 126 (1753). **1633.** "P. tertium Dodonæi."—Ger. em. 822, 3; and Johns. Merc. Bot. 61 (1634).

P. crispum L. Sp. Pl. 126 (1753). **1632.** "Pusillum fontilapathum, Lob."—Johns. Kent (1632), 30.

P. densum L. Sp. Pl. 126 (1753). **1633.** "In the river by Droxford in Hampshire."—Goodyer in Ger. em. 824, 3.

P. zosteræfolius Schum. Enum. Pl. Saell. i. 50 (1801). **1794.** "In a rivulet at Hovingham" (Yorkshire).—R. Teesdale in Linn. Trans. ii. 106 (*P. compressum*).

P. acutifolius Link in Roem. et Sch. Syst. iii. 513 (1818). **1829.** "Found . . . by Mr. Borrer . . . at Amberley, Henfield, and Lewes, Sussex, in June, 1826."—E. B. S. 2609.

P. obtusifolius Mert. et Koch in Roehl. Deutschl. Fl. ed. 3, i. 855 (1823). **1724.** "In fossis prope Deptford."—Dill. in Ray Syn. iii. 150. First found by Buddle, Hort. Sicc. vol. iv. f. 27.

P. Friesii Rupr. in Beitr. Pfl. Russ. iv. 43 (1845). **1660.** "In the river Cam in many places."—R. C. C. 125.

P. pusillum L. Sp. Pl. 127 (1753). **1650.** "P. pumilum nondum descriptum. . . . . Between Carleton and Wulwich."—How, Phyt. 97. "In the rivulet at Hinton Moor," Cambs.—R. C. C. 125 (1660).

P. Sturrockii Ar. Benn. in Scottish Naturalist, n.s. i. 27 (1883). **1883.** Marlee Loch, Perthshire; discovered by Abram Sturrock.—*L. c.*

P. trichoides Cham. in Linnæa, ii. 175 (1827). **1850.** Found by Rev. Kirby Trimmer, in 1848, at Framingham Earl, Norfolk.—Bot. Gaz. ii. 285.

P. pectinatum L. Sp. Pl. 127 (1753). **1660.** "In the river Cam in many places."—R. C. C. 100.

P. flabellatus Bab. Man. ed. 3, 343 (1851). **1851.** "Ponds and ditches."—C. C. Babington, *l. c.* Observed by Babington in canal at Bath in 1830.—Phytol. iv. 1158.

P. filiformis Pers. Syn. Pl. i. 152 (1805). **1843.** "Lakes in Forfarshire."—Bab. Man. ed. i. 326.

Ruppia maritima L. Sp. Pl. 127 (1753). **1677.** "About Maldon in Essex I first observed it."—Ray Cat. ed. 2, 242.

Zannichellia palustris L. Sp. Pl. 969 (1753). **1660.** "Potamogeito affinis gramen aquaticum."—Ray Cat. Cant. 125. "Pond on east side of Islington."—Petiver in Gibson's Camden (1695).

Z. polycarpa Nolte, Novit. Fl. Holsat. 75 (1826). **1875.** "Kirbister Loch, Orphir, Orkney, July, 1874. William Fortescue." —Bot. Exch. Club Report, 1872–4, 41; and Journ. Bot. 1875, 376. First found there by Syme in 1849: see Journ. Bot. *l. c.*

(To be continued.)

SHORT NOTES.

Tortula brevirostris in East Yorkshire.—A short time ago Mr. J. J. Marshall, of Market Weighton, sent to me a specimen of this rare British moss, which he had met with in October, 1895, in a gravel-pit near to Kiplingcotes in the East Riding of Yorkshire. Along with it in the same pit, *Tortula stellata* (Schreb.) Lindb., a nearly allied species, was growing in abundance, whilst *T. brevirostris* was only found in small patches. Mr. Marshall, on looking over his gatherings after getting home, detected the rarer moss amongst them, and by careful examination of its characters he concluded that the smaller of the two plants he had collected must be this rare moss; he therefore sent me specimens, desiring me to confirm his opinion. I possessed some American specimens from the Rocky Mountain locality of this species, and with these the Yorkshire plant agrees identically. So far as I am aware at present, *T. brevirostris* has only been got in two other British localities. It was first recorded as a British moss by Hooker and Greville, from specimens which had been found on a wall in Edinburgh in 1824. The second locality mentioned for this rare moss is on a wall top in Ashwood Dale, near Buxton, Derbyshire, collected there in 1873: a record of this discovery is given by Mr. E. M. Holmes (*Grevillea*, ii. 169). The plant has been met with in France, Greenland, and amongst the Rocky Mountains in North America, never in great abundance in any locality. The discovery of this rare moss in the East Riding is a very interesting addition to the mosses of Yorkshire. The three dioicous allies of this section of the genus, *viz. T. stellata*, *T. ericæfolia*, and *T. aloides*, are all fairly plentiful in the calcareous district around Malton, following the range of calcareous hills from Castle Howard to Scarborough. They are often met with growing on the old mud-capped stone walls near to the villages, and are in their best mature condition during the autumn and winter months, when they may be gathered in mild weather from October to March.—M. B. Slater.

Westerness Plants (*Journ. Bot.* 1895, p. 345).—*Vicia sylvatica* is recorded as a new discovery to that vice-county; it is included in my list of Glen Spean plants recorded in *Ann. Scott. Nat. Hist.* 1892, p. 130, and there is a still earlier record. The *Rubus villicaulis* var. *Selmeri* is only technically a new discovery, for the plant recorded by me in the same place as *R. villicaulis*, with the greater part of North British plants so called, belongs to the variety. The *R. affinis* of my earlier lists (which was *R. affinis* Blox., not of W. and N.) is also identical with this plant. It may be well therefore to put on record the occurrence of *R. villicaulis* var. *Selmeri* from E. and W. Ross, Easterness, Nairn, Elgin, Argyle, Mid-Perth, and Wigton.—G. C. Druce.

Carex Buxbaumii Wahl. — I use the above name because it is the one so long known to British botanists for the rare Irish plant of Lough Neagh. Unfortunately the woody scrub is now cut down, and the plant exposed: "the little island is now a bare exposed pasturage."[*] Its recent discovery in some plenty in the West of Scotland is thus interesting not only as an addition to the Scottish flora, but as retaining in our flora a species that will probably become extinct in its only known Irish locality. There is no question that this plant is *C. polygama* Schk. *Riedgr.* 84, t. 76 (1801); *C. fusca* Allioni, *Fl. Ped.* ii. 269 (1785); and *C. Buxbaumii* Wahlenb. *Kongl. Acad. Handl.* xxiv. 163 (1803), as Prof. Bailey, of Cornell University, U.S.A., has seen the type specimens in the authors' herbaria above named. Prof. Bailey remarks[†]: "Although Allioni places this species [*C. fusca*] in the section characterized by 'spicis pluribus sexu distinctis: mare unica,' it has an androgynous terminal spike. It is represented by a good specimen."

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[*] Stewart & Corry's *Flora of the North-east of Ireland*, 161 (1888).

[†] "Studies . . . of the genus *Carex*," *Mem. Torr. Bot. Club*, i. 63 (1889).

This is quite correct so far as concerns the normal form; but I possess a specimen with one male spike at the apex—there are no female flowers in it; and Allioni may have had such before him. L. K. Rosenvinge, in his "Andet Tillæg til Groenlands Fanerogamer og Karsporeplanter" (published in *Meddelelser om Groenland*, 1892), 721, objects to the use of Allioni's name, and remarks: "Quum vero e descriptione Allionii (*Fl. Pedemont.* ii., 1785, 269) species non rite perspicienda, nomen ejus me judice recipiendum non est. Potius nomen Schkuhrii (*C. polygama*) [1801], vel Schumacheri (*C. subulata*) adoptandum." We have two other Carices named *C. subulata.* That of Michaux (*Fl. Bor. Am.* (1803), ii. 273) must surely bear Nuttall's name *C. Collinsii* (1818), of which, as Kunth notes, there is a specimen in the Berlin Herbarium. *C. subulata* Wahl. *Act. Holm.* 152 (1803) = *C. Boryana* Schkuhr, *Riedgr.* ii. 43 (1806). Schumacher's name dates from 1801 (*Enum. Pl. Saellandiæ*, i. 270).—Arthur Bennett.

Ranunculus pinnatus Poiret.—Prof. Engler (*Hochgebirgsflora* and *Pflanzenwelt Ost-Africa*) discards this name for the common African *Ranunculus* in favour of *R. membranaceus* Fres. I thought it desirable that an examination of the type specimen in the Paris Herbarium should be made. M. A. Franchet very kindly undertook to look this up, and writes to me as follows:—"Nous avons au Muséum, dans l'herbier de Lamarck, le type même du *R. pinnatus* décrit par Poiret, c'est à dire deux portions supérieures d'échantillons, la partie inférieure ayant fait défaut au descripteur. La plante type vient de Sonnerat, mais c'est Lamarck qui a écrit 'Inde' comme étant son pays d'origine. Avant aller dans Inde, Sonnerat s'est arrêté au Cap, et nous avons justement du Cap un specimen de *R. pinnatus* qui ressemble absolument à ceux de Sonnerat, par ses feuilles à segments assez étroits et aigus, ses carpelles à bec droit, un peu épais. Le *R. pubescens* Thunb., souvent rapporté en synonyme du *R. pinnatus*, diffère un peu par ses feuilles. Sauf meilleur avis, je suis donc porté à croire que la plante de Sonnerat proviendrait du Cap plutôt que l'Inde, du d'ailleurs le vrai *R. pinnatus* n'a pas été observé. D'après l'herbier du Muséum on peut assimiler au *R. pinnatus* type 1° la plante du Cap dont je vous parle précédemment. 2°. La plante de Welwitsch, Iter Angol. No. 1208. 3°. La plante d'Abyssinie de Quartin Dillon et Petit, ainsi que celle de Schimper No. 738, que Hochstetter a nommée *R. striatus.* La seule différence qu'elle offre avec le type de Poiret c'est quelle est plus robuste. Enfin la figure du voyage de Speke et Grant est absolument celle du *R. striatus* Hochst., et par conséquent du vrai *R. pinnatus*, et M. Oliver a donné du *R. pinnatus* une synonymie exacte, si vraiment le *R. membranaceus* Fres. est identique avec *R. striatus.*"—E. G. Baker.

Exchange Club for Mosses and Hepaticæ. — While much has been done for the study of phanerogams by means of clubs for exchanging, recording, and naming specimens, I believe the want of such a society for mosses hinders the advance of bryology. If one could be established somewhat on the lines of the Botanical or Watson Exchange Clubs, it would prove of great assistance to beginners in the study, who need much help, and would also promote a knowledge of distribution, and prepare the way for a new edition of the London Catalogue of Mosses, now so much required. At least thirty active members would be required to make such a society successful. I have already had offers of support from a number of friends, and shall be glad if any persons willing to join such a society will send in their names to me. If I receive sufficient support, I will then communicate with some of our leaders in bryology for their advice and assistance. Failing this, with a smaller number it would still be possible to conduct a club by correspondence, but only for exchange of specimens. — C. H. Waddell, B.D., Saintfield Vicarage, Co. Down.

Impatiens Noli-me-tangere in Sussex. — Has the above plant any claim to be considered truly wild in the South of England? It certainly looks so in a large marsh where a pond once stood, near Felbridge, in East Sussex, where the Rev. J. Thorp (of Felbridge) found it some years ago, and where last year I saw it flowering abundantly. I do not think cottagers grow it at all in Sussex or Surrey as a flower.—C. E. Salmon.

NOTICES OF BOOKS.

The Structure and Development of the Mosses and Ferns (*Archegoniatæ*). By Douglas Houghton Campbell, Ph.D. London and New York: Macmillan & Co. 1895. Pp. viii, 544; 266 figs. and 2 diagrams. Price 14s. net.

The archegoniate cryptogams—the Mosses and Ferns—are so important, both in themselves and also in reference to the evolution of the higher plants, and the papers that treat of them are so numerous, so widely scattered through periodical literature, and so often inaccessible owing to their scarcity or to our ignorance of the language in which they are written, that it has become extremely desirable that all that is known of the morphology of the archegoniate plants should be collected, sifted, and compacted into the limits of a single volume. The average botanist, who takes an interest in the subject, and feels unsatisfied with the summarised account afforded by text-books, is apt to find the claims made upon his time by his own particular line of work to be too great to permit of his indulging in a personal search after original papers. A ready hand of welcome is therefore extended to receive the new book, in which Mr. Campbell, the Professor of Botany at the Stanford University in California, has endeavoured to collect all that is essential for a comparative study of the group.

The author has not, however, by any means confined himself to a mere compilation from the work of others, but has made it his aim by patient and independent research to place himself as far as possible in such a position that he may be able to narrate the facts at first hand, and to confirm or correct the statements of previous writers. In carrying out this aim he has made manifold additions to the sum of our knowledge; and his new book is to be regarded as a fresh investigation of the group, with the gaps in the author's observations filled in from the work of others. The result is a vast array of facts, clearly stated, systematically and intelligently arranged, and admirably illustrated; and upon a wise and clear-sighted consideration of these facts an attractive theory has been built up as to the evolution and phylogenetic affinities of the Mosses, Ferns, and Flowering Plants. The abundant figures are for the most part new, and were drawn by the author himself; they are placed where they are of most assistance to the reader, *viz.*, in the text which they illustrate. The book may be described as the outcome of the improved microscopic methods of the present day, and as a brilliant example of the results obtainable by a skilful operator. Readers may be interested to know that Mr. Campbell has presented a large series of his microtome preparations to the British Museum.

Systematists will doubtless quarrel with Mr. Campbell's novel classification of some of the families. However, it is not a matter of much moment what classification is adopted in an avowedly morphological treatise. The present arrangement is a suggestive one, and enables the author to emphasize certain affinities or resemblances which have not hitherto been brought out so strongly, and which may possibly in days to come lead to alterations in the classification at present accepted by systematists.

It is not possible in the limits of this notice to represent at all adequately the amount of ground covered by the author. That must be left to the individual reader to ascertain. But the attention of the latter may profitably be called to several points of interest.

The partitioning of the book is as follows:—Four chapters are allotted to the Hepatics, two to the Mosses, five to the *Filicineæ*, and to the *Equisetineæ* and *Lycopodineæ* one each. In the natural orders of each class the life-history and morphology of selected types are described in detail, beginning with the germination of the spore, and passing through the gametophyte (sexual generation) to the sporophyte (non-sexual generation) in its embryonic and mature stages, until in the subsequent spore-formation the cycle is completed. Deviations exhibited by other genera are also discussed.

The Hepatics are treated in three groups:—(1) *Marchantiaceæ*, characterised by a specialisation of their gametophyte tissues; (2) *Jungermanniaceæ*, characterised by a development of appendicular organs; (3) *Anthoceroteæ* (Mr. Campbell's pet subject), characterised by the simplicity of the gametophyte and the highly differentiated sporangium. This latter group is shown to be of extraordinary morphological interest, as connecting the other Hepatics with the Mosses (through *Sphagnum*) on the one hand, and the eusporangiate Ferns (especially *Ophioglossum*) on the other. The points of resemblance are several, and are properly and fully insisted upon by the author.

Passing over the Mosses, which are regarded as a divergent group which has specialised itself to meet the requirements of modern conditions of existence, we come to the Vascular Cryptogams, with their three classes—*Filicineæ*, *Equisetineæ*, *Lycopodineæ*.

The *Filicineæ* are arranged in two groups—*Eusporangiatæ* and *Leptosporangiatæ*. The former group comprises the homosporous orders *Ophioglossaceæ* and *Marattiaceæ*, and also the heterosporous *Isoetaceæ*. The provisional transference hither of the latter order from the *Lycopodineæ* Mr. Campbell thinks to be justified by the weight of our present evidence. The *Eusporangiatæ* are regarded as the remnants of widely divergent branches of a common stock, which indicate the ancestry of the *Leptosporangiatæ* on the one hand, and on the other possibly that of the Monocotyledons and Dicotyledons along the line of the *Isoetaceæ* (the Gymnosperms having arisen probably along a different line, *viz.*, that of the *Lycopodineæ* viâ the *Selaginellaceæ*). An interesting observation will be found on p. 243, where it is shown that *Botrychium* alone among the Ferns exhibits in its rhizome a true secondary thickening of its vascular bundles. A thickening, but of a modified nature, also occurs in the stem of *Isoetes*. The germination of the macrospore and the embryology of the sporophyte of this latter genus are amply described and figured. The higher *Botrychieæ* and the *Marattiaceæ* are both taken to show lines of approach to the leptosporangiate Ferns, of which *Osmunda* is the lowest step.

The *Leptosporangiatæ* are, like the *Eusporangiatæ*, arranged in two groups—the homosporous *Filices* and the heterosporous *Hydropterides* (*Marsiliaceæ* and *Salviniaceæ*). As to the position of the various orders, and the points of origin at which the *Salviniaceæ* and *Marsiliaceæ* arose, Mr. Campbell has a good deal to say; and his views will be found summed up in the diagram on p. 421. The morphology and life-history of *Azolla* are discussed at some length.

Chap. XIII. is devoted to a consideration of the *Equisetineæ*. The nuclear changes that accompany the development of the spermatozoids and of the spores are well figured and described: the courtesy of the publishers enables us to give specimens of these illustrations (see next page). Cormack's recent observation of a slight secondary thickening in the nodes of *Equisetum maximum* is interesting in connection with the thickening that occurred in the fossil *Calamiteæ*. Another fossil of this group—*Calamostachys*—is of importance as being heterosporous, and confirming the opinion that heterospory arose independently in several widely separated groups of vascular cryptogams—an opinion of which Mr. Campbell makes full use in his scheme of classification.

In Chap. XIV. we reach the final class, the *Lycopodineæ*, with two homosporous orders, *Lycopodiaceæ* and *Psilotaceæ*, and the heterosporous order *Selaginelleæ*. The author has closely investigated the female prothallium of *Selaginella Kraussiana*, and shows that the diaphragm in the macrospore is not a true cell-wall, but a secondary thickening of the lower side of the prothallium which occurs during a temporary cessation of the growth of the latter. The *Lycopodineæ* on the one hand retain several primitive characters, and on the other, through *Selaginella*, show an affinity with the Gymnosperms.

In the concluding chapter Mr. Campbell summarises his views upon the inter-relationships of the *Archegoniatæ*. As to the strength of the arguments upon which these views are based, it must be left to individual readers to judge. By enthusiasts they will be regarded as convincing; by conservatives as fanciful; but by the majority probably as suggestive and eminently helpful. Experts in morphology are certain to offer battle on the subject, and in fighting it out among themselves they cannot fail to place the phylogeny of the *Archegoniatæ* on a surer basis than it has yet attained. Mr. Campbell rightly insists upon the important bearing which the gametophyte and the sexual organs have upon the question, but unfortunately these are still but little or not at all known in some of the orders—e. g. *Ophioglossaceæ* and *Psilotaceæ*.

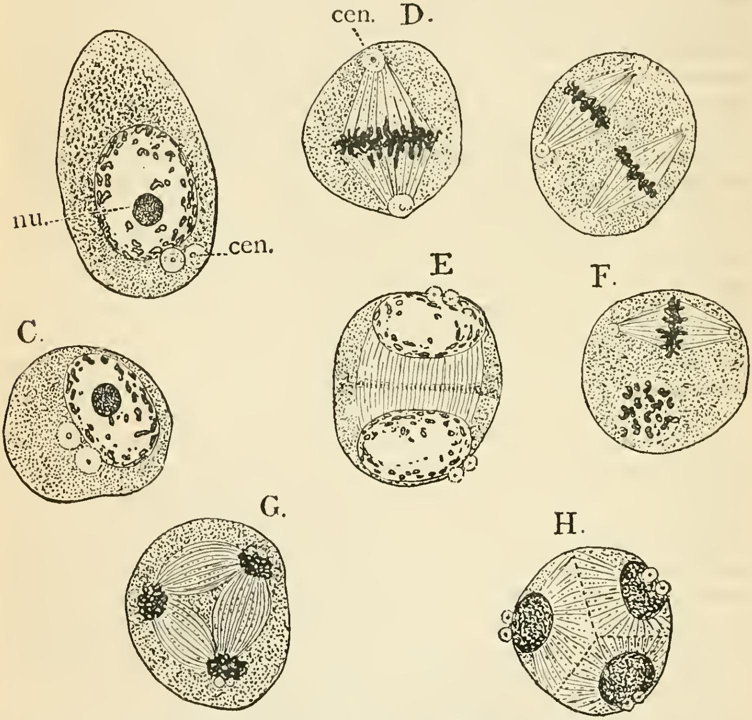


Fig. 240.—Development of the spores of *Equisetum maximum* Lam. Successive stages in the division of the nuclei, × 1200; *cen.* centrospheres; *nu.* nucleolus.

In places the book shows signs of having been hastily edited—*e. g.* on p. 189, l. 7 from end, for "uses" read *loses;* p. 194, l. 5, for "forces" read *faces*, and l. 8, for "forms six rows" read *six rows are formed;* p. 197, l. 2, for "latter" read *former;* p. 436, l. 7, for "tubes" read *tubers;* p. 158, ll. 2 and 4, for "tufa" read *turf*. On p. 111, "incubous" and "succubous" are incorrectly defined.

On p. 208, the leaves of *Leucobryum* are erroneously stated to be "destitute of a midrib," whereas they really consist of an expanded midrib, to the lower margins of which the inconspicuous remains of the wings of the lamina are confined. *Tesselina* is correctly spelt on p. 41, but incorrectly on pp. 42, 68, 69, and in the Index.

A. Gepp.

Handbook of Grasses. By W. Hutchinson. Swan Sonnenschein & Co. Price 2s. 6d.

A cheap handbook of British Grasses will be welcome to agricultural botanists, especially if it contains figures which are accurate enough to enable the student to identify species. Unfortunately Mr. Hutchinson's book, in its method of arrangement, its descriptions, and its woodcuts, will not be of great use to farmers or students. To a botanist, the separation of the species in the author's classification by the habitat is annoying, and even those who are acquainted with the habits of the grasses will be puzzled to know in which of the eight groups any given species is to be found. The practical agriculturist will be surprised not to find couch grass, *Agropyron repens*, in the "agrarian group, grasses found in cultivated land," and if Mr. Hutchinson were correct in placing it in the next group, whose members "are not partial to any of the habitats mentioned," it would be a great saving in the cultivation of English cornfields.

It is surprising that, after the unanimous opinion of experts expressed in recent writings on pasture grasses, that the author of this book should be of the opinion that timothy and cock's-foot are not among the most valuable meadow grasses, thus strengthening the prejudice against the so-called "coarse grasses"—which might be more correctly called the food-producing grasses. The figures, which are from the illustrations to Bentham's *Flora*, are not large enough to be of value for separating species, and it has no doubt been found by students that the admirable woodcuts in Bentham's handbook, while sufficient for the larger proportion of the flowering plants, in the case of the *Gramineæ* and some other orders, do not, owing to their size, contain the necessary detail.

J. B. Carruthers.

ARTICLES IN JOURNALS.

Bot. Centralblatt (No. 1). — F. Brand, 'Ueber die Vegetations verhältnisse des Würmsees und seine Grundalgen.' — (Nos. 2, 3). K. Schilberozky, 'Ueber Bewegungserscheinungen der Bacillariaceen.' — J. H. Wakker, 'Die generative Vermehrung des Zuckerrohrs.'

Bot. Gazette (Dec. 16).—R. Thaxter, 'New or peculiar American Zygomycetes. I. *Dispira*' (1 pl.). — F. V. Coville, 'Botanical explorations of Thomas Coulter' (map). — M. L. Fernald, 'Undescribed Plants from Western Mexico.'—J. D. Smith, 'Undescribed Plants from Guatemala' (1 pl.). — W. G. Farlow, 'Mimicry of Fungi in insects.'—W. W. Ashe, *Rhus caroliniana*, sp. n. (1 pl.).

Bot. Zeitung (Dec. 16). — R. Wagner, 'Die Morphologie des *Limnanthemum nymphæoides*.'—(16 Jan.). C. Correns, 'Zur Physiologie der Ranken.'

Bull. Torrey Bot. Club (Dec. 30).—C. H. Peck, 'New Fungi.'—A. Schneider, 'Phylogenetic Adaptations in Lichens.'—A. M. Vail, '*Galactia* in N. America.' — G. V. Nash, 'American Grasses.'—C. L. Pollard, 'Some Southern Cassias.' — T. H. Kearney, '*Calamagrostis scopulorum* Jones.'

Gardeners' Chronicle (Jan. 4). — *Asplenium Perkinsi* Jenm., *A. Willdenovii* Jenm., spp. nn.—(Jan. 11). C. T. Druery, 'British Fern Varieties' (Jan. 25). — 'A Welsh *Scolopendrium*' (*S. vulgare* var. *Daviesii*: fig. 16).—R. A. Rolfe, 'Natural Hybrid Orchids.'

Irish Naturalist (March). — E. J. McWeeney, 'Fungi from Brackenstown, Co. Dublin.'

Journal de Botanique (Jan. 1). — G. Camus, '*Ophrys litigiosa* G. Cam.'—(Jan. 1, 16). —. Hue, 'Lichens d'Aix-les-Bains.'—E. Roze, 'La transmission des formes ancestrales dans les végétaux.' —(Jan. 16). J. Daveau, 'Dichogamie protérandre chez le *Kentia Behnoriana*.'

Nuovo Giorn. Bot. Ital. (Jan. 15). — S. Sommier, 'Risultati botanici di un viaggio all' Ob inferiore.'—F. Tassi, 'Micologia della provincia senese.' — A. Pizzigoni, 'Cancrena secca ed umida delle patate.' — C. Grilli, 'Lichenes in regione picena lecti.' — G. del Guercio, 'Di un alterazione della corteccia della Querce.' — P. Baccarini & G. Scalia, 'Appunti per la conoscenza di due acarocecidii.' — A. Borzi, 'Apparechi idrofari di alcune xerofile.' — C. Müller, 'Bryologia provinciæ Schen-si sinensis.' — A. Lenticchia, 'Contribuzioni alla Flora della Svizzera italiana.'

Oesterr. Bot. Zeitschrift (Jan.). — A. Makowsky, 'Eine neue *Chenopodium* (*C. carinatum* Br.) der Flora Mährens.'—P. Ascherson, '*Equisetum heleocharis, maximum*, & *Athyrium alpestre*.—E. Sagorski, 'Ein neuer *Euphrasia*-Bastard.' — E. v. Halácsy, 'Zur Flora von Griechenlande' (cont.). — W. Schmidle, 'Beiträge zur alpinen Algenflora.'—J. Freyn, 'Plantæ Karoanæ Dahuricæ' (cont.).

Trans. Linn. Soc. (2nd ser. Botany, iv: Dec. — S. le M. Moore, 'Phanerogamic Botany of Matto Grosso Expedition, 1891–2' (19 plates).—(Botany, v, pt. 2: Oct.). W. & G. S. West, 'Freshwater Algæ of Madagascar' (4 plates).

BOOK-NOTES, NEWS, &c.

We trust that the Chinese Flora is not in danger of coming under the spell which has for so many years enchained the African Floras; but it may be well to call attention to its "arrested development." Two parts yearly (save in one instance) were issued during 1886–1890, and one appeared in July, 1891. Then came a period of three years during which nothing was published, but an instalment of sixty pages was issued in June 1894, since which a year and a half has gone by without further publication. We hope the Linnean Society will press forward this important undertaking, the incompleteness of which is a great drawback to its usefulness.

The *Proceedings* of the Somersetshire Archæological and Natural History Society for 1895 is mainly occupied by the third and concluding part of the Rev. R. P. Murray's *Flora of Somersetshire*, extending from *Solanaceæ* to *Characeæ*, with an appendix. The introduction and title, completing the work, will be sent out with the *Proceedings* for the present year, and we trust the copies of the *Flora* will be issued separately, as the usefulness of Mr. Murray's work will otherwise be considerably lessened. We reserve a more detailed account of what appears to be an important addition to our list of local floras, in the hope that we may later obtain a copy of the completed work.

Mrs. Babington is preparing for publication a 'Life' of the late Prof. Babington, and will be grateful for the loan of letters written by him, which will be promptly returned. Her address is—Brookside, Cambridge.

Dr. Trimen will leave England for Ceylon about the middle of the present month.

In the *Annals of Scottish Natural History* for January, Mr. Druce subjects the ninth edition of the *London Catalogue* to exceedingly minute criticism. Some of his suggestions are worthy of consideration; others (such as the resuscitation of ignored genera) are of doubtful utility; while the publication in a review of this kind of numerous new binominals is not in accordance with the practice of the best authorities, who properly leave the manufacture of such combinations to the monographer, whose work on a genus entitles him to add his name to them. The usefulness of Mr. Druce's paper is marred by the presence of numerous misprints of various kinds—a casual glance through it detects such oddities as "Zannichellia arvensis"; such misspellings as "rotbœllioides," "anagalladifolium," and "Sueda"; such authorities as "Allione" (twice) and "Alphonso de Candolle"; and such citations as "Adans. Fam. p. 16" for "Adans. Fam. ii. 164." Mr. Druce is not always happy in his corrections of the *London Catalogue:* he takes exception to *Epilobium alsinefolium*, and says, "Villars wrote *alsinifolium*." We have not seen Villars' *Prospectus:* but in *Hist. Pl. Dauph.* iii. 511, he writes "*Epilobium alsinefolium*. Prosp. 45."

The Pharmaceutical Society has issued an excellently printed *Museum Report*, containing a descriptive list of the donations made during 1893–4. We note that the natural orders all terminate in *aceæ;* this "deviation from custom has been made with the view of rendering the meaning of the names more easily understood by students"—an admirable aim which it seems to us is hardly attained by the substitution of *Asteraceæ* for *Compositæ*. An alphabetical arrangement is adopted, and separate lists are given of the donations to the Museum and those to the Herbarium. Among the former we note "*Cinchona Pombiana* (R. Thoms. MS.)," and among the latter "*Cinchona Pombiana*, Enriques, MS." On referring to the *Pharmaceutical Journal* (3rd s. xxii. 876), where the bark is described, it would appear that this name is rather intended to apply to a cultivated form than to represent a species: it stands as "4. *Pombiana*" under the heading "Valuable Cinchona Barks from New Granada." As the list was published before the end of 1895, the matter is one which is commended to those who are preparing the Supplement to Mr. Jackson's *Index—apropos* of which we may note the curious entry in the list of new books given in the *Spectator* for Jan. 11th—"Hooker (J. D.) and Another —*Index Kewensis*." Mr. Jackson will be inclined to exclaim— "Hos ego versiculos feci, tulit alter honores."

The portrait of Mr. Carruthers which has been painted by Mr. P. A. Hay for the Linnean Society is now in the Society's rooms. The formal presentation will be made by Sir W. H. Flower, on behalf of the subscribers, at the Society's meeting on Feb. 6th.

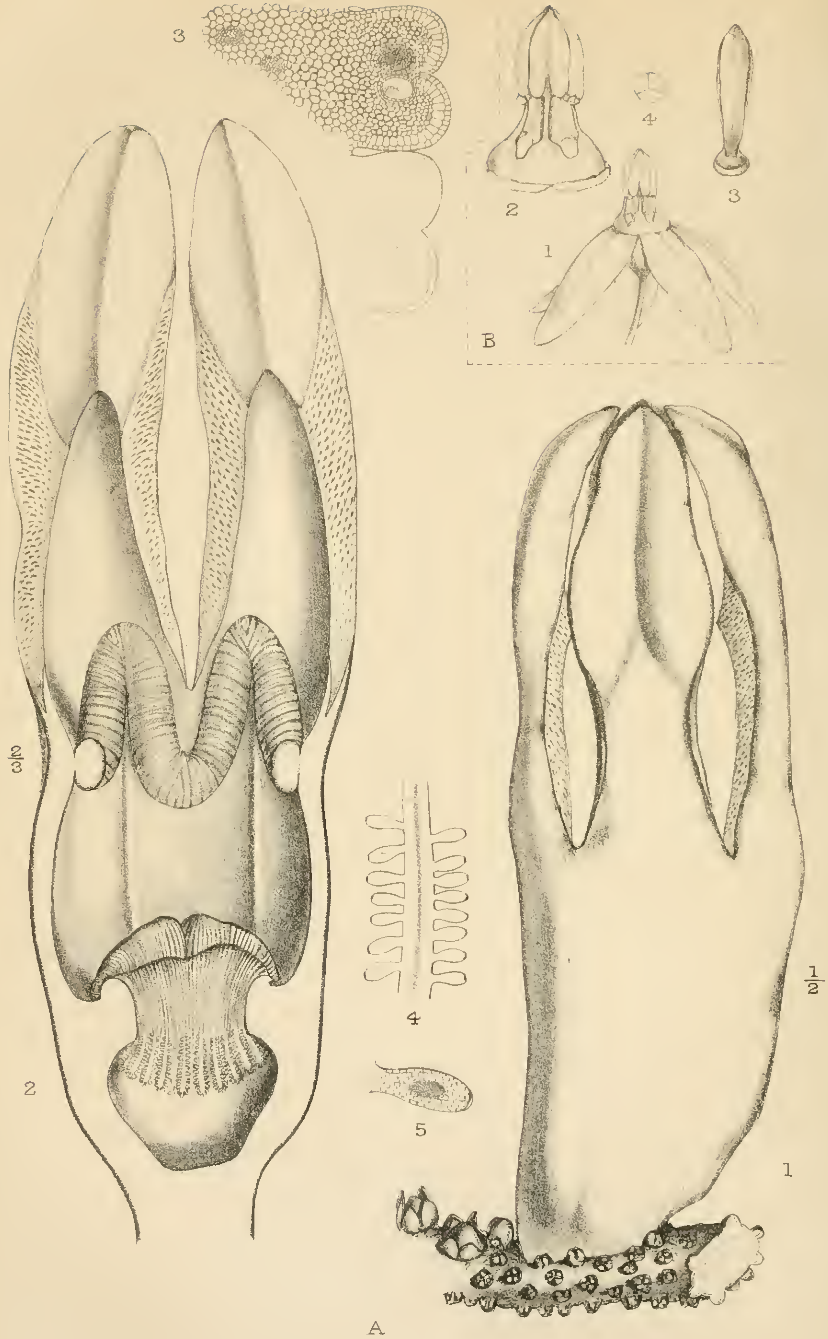
Nearly three thousand drawings of British Fungi by Mr. Edwin Wheeler, of Clifton, have been generously presented to the Department of Botany, British Museum, by Messrs. Edwin and Henry Wheeler. The drawings are not only of a high degree of artistic merit, but are faithful botanical studies of this difficult group, and of especial value as accurate records of colour characters. It is intended to make a special exhibition of a selection of them in the gallery of the Department.

Another gift to the Botanical Department of great value and interest is a splendid series of specimens of giant Pacific Laminarians from Mr. W. E. Shaw, of Leland Stanford University, California. Full-grown complete specimens of such genera as *Nereocystis*, *Egregia*, *Macrocystis*, &c., have been seen by few of our phycologists, and it is hoped that before long they will be on public view.

Mr. G. F. Scott Elliot's account of his travels, entitled *A Naturalist in Mid-Africa*, will be published immediately; and Dr. Gregory's book—*The Great Rift Valley*—will probably be issued this month.

London for Jan. 23rd publishes an interview with the Director of Kew Gardens on the London University question; "Mr. Dyer considers we have been all wrong," and advocates, as others have done, the establishment of a great teaching university in London. The same journal contains an account of the introduction of "girl gardeners" at Kew. "The Director could not engage them as regular gardeners, but as 'boys.'" Being called boys, they dress accordingly: "one condition laid down was that they should wear trousers, and they cheerfully complied," as "new women" might be expected to do. All this seems rather funny.

Tab 356.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R. Morgan lith
West Newman imp

A. Hydnora Hanningtoni *Rendle.*
B. Baseonema Gregorii *Schlechter & Rendle*

NEW AFRICAN ASCLEPIADS.

By R. Schlechter and A. B. Rendle.

Baseonema, gen. nov., subord. *Periploceæ.* Calyx late campanulatus, segmentis 5 brevibus triangulari-ovatis, glandulis 5 minutis subulatis interpositis. Corolla alte 5-fida, lobis oblongo-ligulatis arcte reflexis, tubo glandulis 5 brevibus crassis subter stamina et cum illis alternantibus coronato. Filamenta e basi lata subito filiformia, antheræ glabræ sagittatæ, cum apiculo triangulari. Pollen granulosum, translatoribus spathulatis corpuscula subrotunda instructis. Stigma convexum umbonatum.

B. Gregorii, sp. nov. (Pl. 356 b). Frutex ramis longis teretibus sparse puberulis; foliis breviter petiolatis orbicularibus obtusis breviter pubescentibus; cymis effusis trichotome tum dichotome ramosis; floribus longe pedicellatis, alabastris obtuse triangularibus hirtellis; calycis segmentis quam petala multoties brevioribus; petalis obtusis margine et dorso velut calyce hirtellis, glandulis crassis truncato-pyramidalibus.

Hab. Kinani, East Ongalea Mts., *J. W. Gregory*, 1893.

The long woody branches tapering very gradually from a base about 2 lines in diameter. The leaves 1¾–2 in. long and broad; petioles 4–6 lines long; branches of inflorescence 4–5 in. long; pedicels 1 in. Flower-buds ¼ in. long. The calyx-segments are ½ line long; the corolla-lobes 4 by 1½ lines, sharply reflexed. The stamens (2⅓ lines long) rise separately from the corolla with an ovate triangular base (½ line long), passing into the very slender upper half of the filament (½ line long); the pollen-carriers are shaped like a shoe-horn, and 1 line in length; the short appendages of the anthers converge over the top of the short stigma. The short thick glandular appendages of the corolla are less than ½ line long; they rise from the top of the very short tube just below the insertion of the stamens, with which they alternate.

Near *Pentanura* Bl., from which, however, it is at once distinguished by the almost exappendiculate anthers with broad bases, and also by the presence of the whorl of corolline appendages below the stamens.

Raphionacme Welwitschii, sp. nov. "Herba tubere maximo, depresso-hemisphærico, 3–5 poll. diametro, copiose lactescente perennans; caulibus flagelliformibus, nunc erectis, nunc volubilibus et scandentibus" (*fide* Welwitsch MS.); foliis oblongis vel spathulatis, breviter petiolatis utrinque dense cano-pubescentibus; floribus in foliorum axillis numerosis aggregatis, "ex albido purpurascentibus"; calyce velut pedicellis brevibus hirtello, segmentis ovatis cum glandulis singulis minutis linearibus interpositis; corollæ nondum apertæ lobis ligulato-oblongis tubum plus duplo excedentibus, coronæ squamis subulatis, cum dente parva utrinque instructis; antheris oblongo-lanceolatis breviter apiculatis, translatoribus ligoniformibus.

Hab. Ambaca. "In dumetis sylvestribus arenosis inter Halo et Zamba," Oct. 1856, *Welwitsch*, no. 4234.

According to a rough sketch by Welwitsch, the upper surface ot the tuber has the form of a plate, from the centre of which spring the long whip-like shoots; one of the two preserved is 2½ ft. long; they are dull reddish in colour, and slightly puberulous. The pairs of rather small leaves are separated by long internodes; they vary in shape from oblong to spathulate; the largest is 1½ in. long, including the short petiole, by ¾ in. broad; their dense pubescence gives them a sage-green colour. The calyx-segments are 1 line long; the corolla-tube 1 line, the lobes a little over 2 lines by 1 broad; the corona-segments situated at the top of the corolla-tube are 2 lines; the linear filaments are scarcely ½ line long, the anthers 1 line; the pollen-carrier (⅔ line long) has a slender stalk terminating in a triangular upper part, the whole shaped like a mattock.

Is most nearly allied to the South African *R. Flanagani* Schltr. and the Tropical African *R. volubilis* Schltr., but is easily distinguished by its leaf-characters and shape of the corona-segments, the filiform median tooth of the latter occurring in the two allied species being absent in ours.

Schizoglossum fusco-purpureum, sp. nov. "Herba pedalis, gracilis, filifolia, radice conico-tuberosa, lactescens," foliis margine revolutis velut caule puberulis; inflorescentiis parvis axillaribus; floribus parvulis, fusco-purpureis, velut pedicellis externe pubescentibus; calycis segmentis lanceolatis acutis; corollæ lobis oblongis obtusis; coronæ squamis quinquangulis, dente mediano et processu parvo sub angulis superioribus instructis; antheræ appendice rotunda membranacea; polliniis oblongo-clavatis.

Hab. "Sparse in dumetis subsiccis arenosis prope Huilla," Nov. 1859, *Welwitsch*, no. 4177.

The description is based on a sketch of a plant and on a small flower-bearing branch, both in the British Museum. The very narrow leaves are 1¼ in. long, shorter in the floriferous part of the shoot. The pedicels are 2 lines long, the calyx-segments 1 line, the corolla-lobes just over 1 line long and ½ line broad. The corona-segments are ½ line long, including the membranous triangular median tooth which they bear just below the obtuse apex.

Is very near *S. masaicum* N. E. Br., from Kilimanjaro, but distinguished by the more membranous texture of its flowers, the differently shaped corona-segments and pollinia, the latter being pyriform in the East African species.

Schizoglossum angolense, sp. nov. Herba parva e tubere subconico et pro ratione magno nascens; caule basi lignoso mox herbaceo et ramoso; ramis patentibus; foliis linearibus apice pungentibus; floribus viridescentibus umbellatis, umbellis ramos terminantibus vel axillaribus; calycis segmentis rotatis anguste lanceolatis acutis; corollæ lobis patentibus ovatis vel oblongo-lanceolatis; coronæ squamis ovatis lobo obtuso super basin rotundam utrinque instructis, et facie interne bicarinatis; filamentis brevissimis, antheræ appendice breviter ovata, stigma planum

5-lobatum excedente; polliniis oblongis caudiculis brevibus filiformibus.

Hab. Huilla. "In pascuis parce dumetosis prope Lopollo sporadica," Dec. 1859, *Welwitsch*, no. 4173.

The fleshy tapering tuber is nearly 3 in. long, the rest of the plant about 3½ in., with a hemispherical general outline. The radiating branches (1½–1¾ in. long) are well clothed with narrow spreading leaves 1½–2 in. long. The peduncles are ½ in. long, the umbels about 7-flowered, the pedicels 1 line long. The calyx-segments are ⅔ line long, the corolla-lobes 1 line by ½ line broad, the corona-scales ½ line long, a little shorter than the anthers.

Near two South African species *S. orbiculare* Schltr. and *S. umbelluliferum* Schltr., which, however, are at once distinguished by their ligulate corona-scales.

Cynanchum Welwitschii, sp. nov. "Herba glauco-viridis volubilis, late scandens, lactiflua, foliis carnosulis, mox flaccidis, supra læte viridibus, subtus pallidus," cordatis, apiculatis, venis venulisque sparse pilosis, laminis petiola duplo superantibus; inflorescentia corymbosa axillare, ramis florumque pedicellis subumbellatis; calycis segmentis ovato-lanceolatis; ciliolatis, corollæ tubo brevissimo, lobis lanceolatis superne falcatis obtusis, e Welwitsch sordide violaceis; corona basi tubuliforme in caudas 5 subulatas flexuosas utrinque crenula parva suffultas elongata; antheris breviter sagittatis, appendice rotunda terminatis; polliniis oblongis, caudiculis brevissimis; stigmate subrotundo; folliculis solitariis, conico-pyramidatis, angulo 1 obtusissimo, binis acutis; seminibus brunneis late ovalibus, complanatis, alatis.

Hab. Golungo Alto. "Ad dumeta in Sobato de Mussengue, ast non frequens; socialis cum *Tragia*. Ad fin. Novbr. 1855," *Welwitsch*, no. 4222 & no. 4200. Kampala, Jan. 1894, *G. F. Scott Elliot*, no. 7294.

The slender striate stem bears a sparse pale ferruginous pubescence. The leaf-blades are 1¾–3½ in. long by 1–2½ in. broad, the petioles 1–1½ in. The peduncle of inflorescence is from 1 to 2 in. long, the puberulous pedicels about 1 in. The calyx-segments are 1¼ lines long, the corolla-lobes 3½ by 1⅓ lines, the corona-tube 1½ lines, the long tails 1⅓ lines; on each side of the latter is a minute crenation. The short broad filaments are attached at the base to the corona-tube; the whole stamen is 1 line long. The narrow fruit is a little over 3 in. long, less than ½ in. broad. The flattened seed is 2½ lines long by 1¾ broad, and crowned with a white silky tuft of hairs ¾ in. long.

This plant was included in the list of Mr. Scott Elliot's African Asclepiads (see *Journ. Bot.* 1895, 337) as *C. mossambicense* K. Sch.? After seeing Schumann's type at Berlin, Mr. Schlechter is convinced that we are dealing with a different species.

The nearest ally of *C. Welwitschii* is *C. Holstii* K. Sch., from which, however, it differs in its corona, its falcate petals, and broader sepals, as well as in leaf-characters.

Marsdenia Taylori, sp. nov. Volubilis, caule flagelliforme, foliis ovali-ovatis acutis uninerviis glabris; inflorescentia parva axillari breviter dichotome ramosa, floribus pluribus dense glomeratis; pedicellis brevibus, calyce breviter campanulato sparse pilosulo, segmentis late ovalibus vel ovatis ciliolatis, glandulis parvis singulis linearibus interpositis; corolla campanulata, lobis brevibus rotundatis emarginatis, tubo pilis albidis erectis ore instructis, et infra setis numerosis reflexis cum staminibus alternantibus indutis; coronæ squamis antheris adnatis, parte tantum superiori libera membranacea anguste triangulari, ab antheræ appendice latiori superata; polliniis filiformibus, caudiculis latis membranaceis.

Hab. Rabai Hills, East Tropical Africa, July–Sept. 1885, *W. E. Taylor.*

The leaves are 4 in. long by scarcely 2 in. broad, and have an entire obtuse base; the petioles $\frac{2}{3}$ in. long. The whole inflorescence is only $\frac{1}{2}$–$\frac{3}{4}$ in. in length, the peduncles being 3–4 lines, and the closely crowded pedicels borne on its short branches, 1–1$\frac{1}{2}$ lines. The calyx-segments are $\frac{3}{4}$–1 line long; the corolla is 2 lines long, its lobes only $\frac{2}{3}$ line; the mouth of the tube is filled with a ring of stiffish hairs, while the interior of the tube at the level of the stamens bears tufts of downwardly pointing shorter but otherwise similar hairs. The corona-scales, except for the short (less than $\frac{1}{2}$ line) acute tip, are adnate to the backs of the anthers, the broader triangular appendage of which overtops them; the stamens are 1 line long, with coherent filaments.

Is near the Indo-Malayan and Chinese species *M. tinctoria* Br., but is distinguished by its inflorescence, larger flowers, and leaves with a marked obtusely pointed base.

Explanation of Plate 356 B.—*Baseonema Gregorii.* Fig. 1. Flower, × 2. 2. Flower from which petals have been cut away, × 4. 3. Pollen-carrier, × 4. 4. Pollen tetrad.

LICHENES ANTILLARUM A W. R. ELLIOTT COLLECTI.

Exponit Edv. A. Wainio.

(Continued from p. 72.)

Trib. 10. Lecideæ.

1. Cladonia.

1. C. Floerkeana (Fr.) Sommerf. *C. bacillaris Nyl. α. clavata (Ach.) Wain. Mon. Clad. i. 92. Ad truncos putridos in monte St. Andrews (2000 ped.) in St. Vincent (n. 82, pr. p.).

2. C. didyma (Fée) Wain. α. muscigena (Nyl.) Wain. Mon. Clad. i. 141. Ad terram humosam in rupe in Roseau Valley (n. 111) et in cacumine montis Morne Diablotin (4500–4700 ped. s. m.) in Dominica (n. 701).

f. *polydactyloides* (Müll. Arg.) Wain. *l. c.* 142. Ad terram humosam in rupe in monte Morne Anglais (3750 ped. s. m.) in

Dominica (n. 496) et ad lignum putridum in monte St. Andrews (2000 ped. s. m.) in St. Vincent. Sterilis.

3. C. FIMBRIATA (L.) Fr. var. BORBONICA (Del.) Wain. Mon. Clad. ii. 343, 344. Ad lignum putridum in Layon Park (800–1000 ped. s. m.), n. 112, et in Prince Empert Town in Dominica et in monte St. Andrews (2000 ped. s. m.) in St. Vincent (n. 82, pr. p.).

2. LECIDEA.

1. L. (BACIDIA) MEDIALIS Tuck.; Wain. Étud. Brés. ii. 17. Ad corticem arborum in Kingstown (n. 253) et Coles Hill in St. Vincent.

2. L. (BILIMBIA) ANDITA Nyl. Fl. 1864, 620; Wain. Étud. Brés. ii. 24. *L. andesita* Nyl. in Hue, Lich. Exot. (1892) 197. In rupe ad Bath Estate (n. 134 et 150) et in Souffrière (n. 147) in Dominica. Hypothecium fulvescens aut fulvescenti-pallidum aut testaceo-rufescens.

f. *pluriseptata* Wain. Sporæ demum 8–9-septatæ. Supra rupem ad Fort Charlotte in St. Vincent. Apothecia demum convexa. Hypothecium fulvescens aut rufescenti-fulvescens. Hymenium iodo intense cærulescens, dein partim violacee obscuratum. Sporæ fusiformes, altero apice angustiore, apicibus acutis aut obtusiusculis, long. 0·023–0·030, crass. 0·005–0·006 millim.

Var. SUBMEDIALIS Wain. Corticola. Sporæ fusiformes aut oblongo-fusiformes, altero apice rotundato et altero angustato et acutiusculo, long. 0·023–0·013, crass. 0·006–0·003 millim., 5–8-septatæ. Hymenium iodo intense persistenterque cærulescens. Hypothecium pallidum aut fulvescens, KHO non reagens. Apothecia plana aut demum convexiuscula. Thallus rimoso-areolatus, areolis granulato-inæqualibus. Intermedia est inter *L. Anditam* et *L. medialem*, at reactione hymenii et forma sporarum magis cum priore congruens. Ad corticem arboris in Kingstown in St. Vincent (n. 252, pr. p., cum *L. mediali*).

3. L. (BILIMBIA) **dominicana**, sp. n. Thallus tenuis, æqualis, subcontinuus, glauco-virescens. Apothecia adpressa, 0·6–0·3 millim. lata, disco plano planiusculove, fusco aut rufo, nudo, margine tenui, persistente, albido, lævigato. Hypothecium rubescenti- aut fulvescenti-rufescens, KHO non reagens. Hymenium arcte cohærens, circ. 0·070–0·085 millim. crassum, iodo intense persistenter cærulescens. Epithecium passim pallidum. Paraphyses numerosæ, capillares, simplices. Asci clavati, circ. 0·012 millim. crassi, membrana sat tenui. Sporæ 8næ, aciculari-fusiformes, altero apice rotundato obtusove, altero attenuato, aut apicibus ambobus attenuatis, long. 0·014–0·024, crass. 0·0025–0·0035 millim., decolores, 3–7-septatæ, haud constrictæ. Ad folia arborum in Dominica (cum n. 517). Hypothallus indistinctus. Excipulum ex hyphis radiantibus formatum conglutinatis, cellulis oblongis aut ellipsoideis, mediocribus, parenchymaticis, pallidum, basi partim fuscescens, KHO non reagens. Habitu *Pilocarpum leucoblepharum* in memoriam revocat.

4. L. (BILIMBIA) **mollissiæformis**, sp. n. Thallus evanescens,

indistinctus (infra apothecia gonidiis paucis protococcoideis instructus). Apothecia adpressa, 0·3–0·15 millim. lata, depresso-convexa, immarginata, testaceo-pallida, ad ambitum pallidiora. Excipulum basi cyanescens. Hypothecium superius decoloratum, inferius pallido-olivaceum, KHO non reagens. Hymenium arcte cohærens, circ. 0·045 millim. crassum, iodo intense persistenter cærulescens. Epithecium decoloratum. Paraphyses parcissime evolutæ (ad latera hymenii parce ramoso-connexæ: in acido acetico visæ), in hymenio ascis sterilibus compensatæ. Asci clavato-ventricosi. Sporæ 8næ, elongatæ, apicibus obtusis aut rotundatis, long. 0·018–0·021, crass. 0·003–0·004 millim., decolores, 6–7-septatæ, haud aut parum constrictæ. Ad folia arboris in Bonhomme Woods in St. Vincent (cum n. 351). Excipulum minute pseudo-parenchymaticum. Apothecia ceraceo-semipellucida. Colore hypothecii a *Lecidea fuscatula* (Müll. Arg. Lich. Beitr. n. 298) et *Lecidea rufula* (Müll. Arg. Lich. Beitr. n. 299) differt.

5. **L.** (Bilimbia) **nana**, sp. n. Thallus crustaceus, tenuis, obscure cinereo-glaucescens, sorediis minutis rotundatis glaucescenti-albidis adspersus, subcontinuus, sat æqualis, hypothallum fusco-nigricantem obducens. Apothecia increbra, 0·3–0·25 millim. lata, adpressa, disco planiusculo aut leviter convexiusculo, umbrino aut umbrino-testaceo, nudo, margine nigricante, tenuissimo evanescenteve, integro. Excipulum parte exteriore albidum. Hypothecium fusco-nigricans, KHO non reagens. Hymenium circ. 0·035 millim. crassum, totum decoloratum, iodo persistenter cærulescens. Paraphyses numerosæ, filiformes, tenues, simplices, apice haud incrassatæ. Asci clavati, circ. 0·008 millim. crassi, membrana tenui. Sporæ 8næ, decolores, fusiformes aut ovoideo-fusiformes, apicibus obtusis, long. 0·009–0·007, crass. 0·003–0·0025 millim., rectæ, 3-septatæ. Supra Pyrenulam vetustam ad corticem arboris in Richmond Valley in St. Vincent (n. 273). Affinis est *L. lividofuscescenti* Nyl., at multo minor. Excipulum ex hyphis radiantibus conglutinatis formatum, cavitate cellularum angusta.

6. **L.** (Bilimbia) **variabilis**, sp. n. Thallus crustaceus, crassitudine mediocris (circ. 0·5 millim. aut tenuior), verruculosus et rugulosus rugosusque, subcontinuus aut areolato-diffractus, sordide glaucescens aut cinereo-glaucescens aut rarius glaucescenti-albidus, hypothallo albido parum evoluto. Apothecia 0·7–0·3 millim. lata, adpressa, numerosa crebraque, disco planiusculo aut leviter convexiusculo, fusco-nigricante aut pallescente (in eodem specimine), nudo, margine tenui, integro, persistente, nigricante aut rarissime pallescente (in apotheciis pallidis quoque vulgo nigricante aut rarissime pr.p. pallescente). Excipulum vulgo fusco-fuligineum aut violaceo-fuscescens, centro demum deficiens. Hypothecium dilute fuscescens aut fulvo-rufescens, tenue, KHO non reagens. Hymenium circ. 0·050–0·060 millim. crassum, parte superiore decoloratum aut ambitum versus dilutissime subfuscescens, iodo intense cærulescens et demum partim violascenti-obscuratum. Paraphyses sat arcte aut sat laxe cohærentes, 0·0015 millim. crassæ, apice haud aut levissime incrassatæ. Asci clavati. Sporæ 8næ, decolores, fusi-

formes aut oblongæ aut elongato-fusiformes, apicibus obtusis, rectæ, 3-septatæ, long. 0·019–0·011, crass. 0·0035–0·0025 millim. Ad cementum et lapides in Fort Charlotte in Kingstown in St. Vincent (n. 258, etc.). Affinis est *L. phæomelæ* Nyl. Prodr. Nov. Gran. ed. 2, 344; Stizenb. Lec. Sabul. 69, at thallo fere esorediato, crassiore, hymenio crassiore, iodo intense cærulescente ab ea differens.

7. **L.** (Bilimbia) **chlarodes**, sp. n. Thallus crustaceus, tenuis, continuus, minute subverruculosus aut sat lævigatus, glaucescenti-stramineus, KHO leviter lutescens, $CaCl_2O_2$ non reagens, esorediatus, hypothallo albo parum evoluto. Apothecia adpressa, elevata, 0·8–1·3 millim. lata, pro parte crebra, pro parte increbra, disco plano, nigro aut cæsio-livido (in eodem specimine), margine crassiusculo, integro aut leviter flexuoso, discum superante, albido, persistente. Excipulum parte exteriore albidum aërem inter hyphas radiantes continens, KHO lutescens, intus circa hymenium in margine fusco-nigrum. Hypothecium fusco-nigrum, KHO non reagens. Hymenium circ. 0·070–0·080 millim. crassum, parte superiore decoloratum aut pallido-livescens, iodo persistenter cærulescens. Paraphyses numerosæ, 0·0015 millim. crassæ, apice haud incrassatæ, sat parce ramoso-connexæ. Asci clavati. Sporæ 8næ, decolores, oblongæ, apicibus obtusis, rectæ, 3-septatæ, long. 0·009–0·011, crass. 0·003 millim. Ad corticem arboris in cacumine montis Morne Couronne (2400 ped. s. m.) in Dominica (n. 166). Apothecia nigra habitu fere sicut in *Lecanora chlarona*, at gonidiis destituta. Excipulum ex hyphis radiantibus formatum, modice pachydermaticis, aëre disjunctis, at apice conglutinatis et stratum corticale excipulum obducens formantibus. Gonidia protococcoidea. Cum *Bombyliosporis* et *Lecanactideis* hæc species analogias ostendit.

8. **L.** (Lopadium) **amaura**, sp. n. Thallus crustaceus, tenuis aut mediocris, continuus, sat lævigatus aut verruculoso- et ruguloso-inæqualis, glaucescenti-albidus aut sordide glaucescens, esorediatus, KHO non reagens, hypothallo cæruleo-nigricante passim interdum evoluto. Apothecia adpressa, elevata, 1–0·5 millim. lata, disco plano aut raro demum convexiusculo, nigro, nudo, opaco, margine sat crasso, cinerascente aut cyanescenti-cinerascente aut superne pr. p. nigricante, persistente, integro, discum vulgo superante. Excipulum extus albidum, in margine intus cæruleo-smaragdulum aut cyanescenti-fuligineum. Hypothecium superne anguste dilute sordide violascens aut sordide olivaceum, inferne dilute cyanescens aut cæruleo-smaragdulum et parte infima (excipulari) albidum, KHO non reagens. Hymenium circ. 0·080–0·090 millim. crassum, parte superiore smaragdulo-cæruleum aut olivaceum, laxe cohærens, KHO non reagens, iodo persistenter cærulescens. Paraphyses numerosissimæ, 0·0015 millim. crassæ, apice haud incrassatæ, sat parce ramoso-connexæ. Sporæ solitariæ, decolores aut demum sordide pallidæ, oblongæ, apicibus rotundatis aut rarius obtusis, rectæ, murales, cellulis numerosissimis, halone nullo indutæ, long. 0·070–0·100 millim., crass. 0·019–0·028 millim. Ad corticem arborum in Roseau Valley in Dominica (n. 113 et 120).

L. pezizoideæ (Ach.) affinis et apotheciis eam in memoriam revocans, at apotheciis minus elevatis et margine pallidiore instructis et colore epithecii cet. ab ea bene differens. Excipulum hyphis radiantibus, conglutinatis, cellulis oblongis, sat angustis.

9. **L.** (Lopadium) **Elliottii**, sp. n. Thallus crustaceus, tenuis vel tenuissimus, sat continuus, sat æqualis, glauco-virescens. Apothecia adpressa, 0·8–0·4 millim. lata, disco primum planiusculo, demum convexo, testaceo-pallido aut sordide testaceo, epruinoso, margine sat tenui, discum pallidiore, primum discum æquante, demum excluso aut subpersistente. Excipulum pallidum, minute parenchymaticum, extus lævigatum. Hypothecium rufescenti-rubescens aut fulvescenti-rufescens, KHO non reagens. Hymenium 0·070–0·100 millim. crassum, totum decoloratum, iodo intense persistenter cærulescens. Paraphyses parce evolutæ, tenuissimæ, increbre ramoso-connexæ (in H_2SO_4 visæ). Sporæ 8næ aut 4næ aut abortu solitariæ, decolores, fusiformes aut fusiformi-elongatæ, altero apice vulgo angustiore, apicibus obtusis aut altero apice rotundato, halone indutæ aut destitutæ, submurales, septis transversalibus 7–9, septis longitudinalibus paucissimis, vulgo solum 10–12-cellulosæ, long. 0·026–0·032, crass. 0·005–0·009 (raro 0·011) millim. Ad folia arborum (duarum specierum) in Bonhomme Woods in St. Vincent. *L. perpallidam* Nyl. in memoriam revocat, sed minor. Stratum hypothallinum cyanescens solum infra apothecia evolutum. Gonidia protococcoidea (forsan pleurococcoidea), simplicia, membrana sat tenui. Asci clavati, membrana tenui.

10. **L.** (Lopadium) **rubicundula**, sp. n. Thallus crustaceus, tenuis, maculas sæpe rotundatas formans, leviter inæqualis aut sat æqualis, glaucescenti-albidus, interdum demum desquamescens. Apothecia adpressa, 0·4–0·2 millim. lata, disco plano, rufescenti-rubicundo, epruinoso, margine mediocri aut sat tenui, carneo-albido, discum æquante, persistente. Excipulum impellucidum et aërem inter hyphas continens, irregulariter crebre contextum, gonidiis destitutum, KHO lutescens et dein rubescens (crystalla acicularia brevia rubra formans). Hypothecium rufescenti-pallidum aut testaceum. Hymenium 0·060 millim. crassum, totum decoloratum aut epithecio passim pallido, iodo intense persistenter cærulescens. Paraphyses parum evolutæ, fere diffluxæ, ramoso-connexæ. Sporæ solitariæ, decolores, ellipsoideæ, apicibus rotundatis, halone nullo aut tenui indutæ, murales, cellulis numerosis, long. 0·034–0·038, crass. 0·016–0·018 millim. Ad folia filicis arboreæ in Morne Cochon (1200 ped. s. m.) in St. Vincent. Gonidia protococcoidea.

11. L. (Lopadium) Leprieurii (Mont.) Wain. *Sporopodium Leprieurii* Mont. Ann. Sc. Nat. 3 sér. Bot. t. xvi. p. 54, tab. 16, fig. 1 (haud bona). *Lecidea reveniens* Nyl. Enum. Gén. Lich. 123. *Lopadium Leprieurii* Müll. Arg. Lich. Beitr. (1890), n. 1524. Ad folium in Bonhomme Woods in St. Vincent. Huc etiam *Phlyctis arachnoidea* Krempelh. Lich. Becc. 16 et *Lopadium arachnoideum* Müll. Arg. Lich. Beitr. n. 1525 pertinere videntur. Saltem planta nostra inter *L. Leprieurii* et *L. arachnoideum* Müll. Arg. intermedia est. Forsan etiam *L. stephanella* Nyl. Fl. 1866, 291, ad eandem

speciem pertinet, vix nisi thallo granuloso et hypothallo fusco ab ea differens. Plantam ab Elliott lectam hic describimus. Thallus tenuissimus, byssoideus vel arachnoideus, cinerascens. Apothecia adpressa, 0·5–0·3 millim. lata, disco plano, nigro aut fusco-nigricante, epruinoso, opaco, margine cinereo aut cinereo-albido, tenuissimo, dein mox excluso, pilis obducto. Excipulum intus (etiam in margine) cyanescens, parte exteriore late albidum, parenchymaticum, extus pilosum, pilis 0·005–0·008 millim. crassis, membrana incrassata, cellulis oblongis, sat latis. Hypothecium cæruleo-smaragdulum et fuscescenti-smaragdulum, KHO partim olivaceum. Hymenium 0·110–0·130 millim. crassum, iodo intense persistenter cærulescens. Epithecium pallidum aut olivaceum, KHO non reagens. Paraphyses haud numerosæ, increbræ, ramoso-connexæ. Sporæ singulæ aut raro binæ, decolores, oblongæ aut elongatæ, apicibus vulgo rotundatis, halone nullo indutæ, long. 0·075–0·112, crass. 0·019–0·020 millim., murales, cellulis numerosissimis, in seriebus transversalibus numerosissimis. Hypothallus cæruleo-nigricans infra excipulum evolutus. Thallus in specimine ab Elliott lecto male evolutus et algis variis fortuito immixtus, laxe contextus, hyphis circ. 0·004–0·002 millim. crassis. Excipulo parenchymatico bene evoluto, solum extus piloso, a *Pilocarpeis* Wain. Etud. Brés. ii. 88 differt.

12. L. (Lopadium) **subpilosa**, sp. n. Thallus crustaceus, tenuissimus, parum evolutus. Apothecia adpressa, 0·3–0·2 millim. lata, disco plano, nigro, epruinoso, opaco, margine cinereo aut cinereo-albido, tenuissimo, subpersistente aut demum excluso. Excipulum grosse parenchymaticum, extus pilis brevissimis, 0·002–0·003 millim. crassis instructum, albidum et circa hymenium cyanescens. Hypothecium superne fuscescenti-nigricans, inferne cyanescens, KHO sordide violascens. Hymenium 0·080–0·070 millim. crassum, iodo intense persistenter cærulescens. Epithecium fusco-cyanescens aut olivaceum. Paraphyses sat parce evolutæ, apice haud incrassatæ, pr. p. haud ramosæ, pr. p. valde increbre ramoso-connexæ ramosæque. Sporæ solitariæ, decolores, oblongæ, apicibus rotundatis, halone nullo indutæ, long. 0·060–0·070, crass. 0·016–0·022 millim., murales, cellulis numerosissimis. Ad folia arboris in Dominica.

13. L. (Bombyliospora) domingensis (Pers.) Nyl.; Wain. Étud. Brés. ii. 33. Ad corticem arborum in Richmond Valley (n. 242) et ad Bow-wood (1000 ped. s. m., n. 130) in St. Vincent.

14. L. (Catillaria) lætior Nyl. Prodr. Nov. Granat. ed. 2 (1863), 343 (*Patellaria lætior* Müll. Arg. Lich. Beitr. 1882, n. 432). Thallus crustaceus, sat tenuis, verruculoso-granulosus, cinereo-virescens vel sordide glauco-virescens. Apothecia adpressa, 1·2–0·7 millim. lata, pallida aut testaceo-pallida, plana, margine mediocri, discum æquante disco concolore aut paullo pallidiore, demum excluso. Excipulum, hypothecium et hymenium dilute pallidum. Paraphyses arcte cohærentes. Hymenium 0·060–0·070 millim. crassum, iodo cærulescens et demum obscuratum. Sporæ 8næ, fusiformi-oblongæ aut fusiformi-ellipsoideæ, apicibus obtusis, rectæ, 1-septatæ aut primo simplices, long. 0·007–0·011, crass. 0·004–0·005

millim. Gonidia protococcoidea. Ad lignum putridum in Richmond Peak in St. Vincent (n. 262).

15. L. (Psora) breviuscula Nyl.; Wain. *l. c.* 45. Ad corticem arboris in Bow-wood (800 ped. s. m.) in St. Vincent (n. 135). Excipulum violaceo-fuscescenti-fuligineum, KHO non reagens, inferne rhizinis obductum aut pr. p. rhizinis destitutum. Hypothecium pallidum vel sordide pallidum vel parte superiore dilute fuscescenti-pallidum, KHO non reagens. Sporæ long. 0·005–0·006, crass. 0·0025 millim.

16. L. (Psora) corallina Eschw.; Wain. *l. c.* 48. Ad corticem arboris in Richmond Peak (800 ped. s. m.) in St. Vincent (n. 264). Verruculæ thalli in isidia subteretia accrescentes. Hypothecium fulvescens, KHO intensius rufescens. Sporæ long. 0·009–0·011, crass. 0·002–0·0025 millim.

Var. schizophyllodes Wain. Verruculæ thalli in squamulas applanatas, 0·1 millim. latas accrescentes. Hypothallus nigricans. Hypothecium parte superiore fulvescenti-rufescens, parte inferiore rufescens, KHO non reagens. Sporæ long. 0·007–0·011, crass. 0·002 millim., fusiformi-oblongæ. Ad corticem arboris in Richmond Peak (1000–2000 ped. s. m.) in St. Vincent (n. 261). Thallo a *L. corallina* differt et analoga est *L. furfuraceæ* f. *schizophyllæ* Wain. *l. c.* 47.

17. L. (Biatora) **ochrothelia**, sp. n. Thallus crustaceus, tenuissimus, albido-glaucescens, continuus, æqualis. Apothecia adpressa, 0·7–0·4 millim. lata, convexa, immarginata, testaceo-pallida. Excipulum grosse parenchymaticum, pallidum, basi infima cyanescens. Hypothecium pallidum. Hymenium molle, ab hypothecio haud distincte limitatum, iodo haud reagens. Epithecium pallidum aut passim testaceum, tenue, KHO non reagens. Paraphyses molles, in gelatinam fere dissolutæ, parum distinctæ. Asci clavati, membrana tenui, molli. Sporæ abortu paucæ, ellipsoideæ et long. 0·010 et crass. 0·007 millim. aut globosæ vel subglobosæ et diam. 0·007–0·005 millim., decolores, simplices. Ad folia arboris in Dominica (cum n. 517) obvenit, at solum parcissime lecta. Epithecium fortuito gonidia protococcoidea continet. Thallus gonidia protococcoidea continens. Planta insignis, et notis datis facile cognita, quamquam nimis parce lecta. Ab affini *L. Trailiana* Müll. Arg. Lich. Epiphyll. Spruc. 324, bene differt.

18. L. (Biatora) piperis (Spreng.) Nyl. f. erythroplaca (Fée) Krempelh.; Wain. *l. c.* 53. Ad corticem arborum in Roseau Valley (n. 127), Morne Couronne (n. 168), et Basin Will (n. 354) in Dominica.

f. *denigrata* Tuck. in Wright, Lich. Cub. n. 192. Apothecia disco pallescente, margine nigricante. Thallus variabilis, materia coccinea plus minusve abundante, aut superficie glaucescente. Ad corticem arboris in Morne Anglais in Dominica (n. 522). Etiam ad Rio de Janeiro in Brasilia a me lecta.

f. *canorufescens* Wain. Habitu vix differens a *L. canorubella* (Nyl.) Wain. Étud. Brés. ii. 51, at thallo passim parcissime materiam coccineam continens et sporis crassioribus. Thallus glaucescens, intus vulgo albidus et materia coccinea destitutus, at passim parcissime etiam materiam coccineam continens. Apothecia disco testaceo-rufescente aut griseo-rufescente aut rufo-fuscescente, plano aut demum convexo, margine cinereo. Excipulum parte interiore fusco-nigrum, parte exteriore pallidum. Sporæ long 0·011–0·013, crass. 0·007–0·009 millim. Ad corticem arborum in Roseau Valley (n. 134) in Dominica et ad Government House (900 ped. s. m., n. 127) et Kingstown (n. 256) in St. Vincent.

19. **L.** (Biatora) **phæopsis**, sp. n. Thallus crustaceus, sat tenuis, rimoso-diffractus, superficie leviter verruculoso-inæquali, partim fere lævigata, sordide coloratus aut sordide albicans, KHO non reagens. Apothecia 0·6–1·5 millim. lata, adpressa, disco convexiusculo aut rarius plano aut demum convexo, fusco-nigro, sat opaco, nudo, margine griseo-fuscescente, mediocri, discum haud superante, integro, persistente aut raro demum excluso. Excipulum fusco-nigrum, parte exteriore in margine anguste albido-decoloratum et inferne subpallidum aut fuscescenti-hyalinum. Hypothecium fusco-nigrum. Hymenium 0·100 millim. crassum, parte superiore pallidum, iodo persistenter cærulescens. Asci clavati. Sporæ 8næ, monostichæ aut distichæ, decolores, simplices, ellipsoideæ et pr. p. subgloboso-ellipsoideæ, apicibus rotundatis, long. 0·010–0·012, crass. 0·005–0·008 millim. Ad corticem arboris in Morne Couronne (2000–2400 ped. s. m.) in Dominica (n. 159). Affinis *L. sanguineoatræ* et *L. albofuscescenti*, a quibus sporis crassioribus et margine pallidiore differt. Paraphyses 0·0007 millim. crassæ, gelatina in KHO mollescente separatæ, apice haud incrassatæ.

20. **L.** (Biatora) **arthoniopsis**, sp. n. Thallus crustaceus, subcontinuus, tenuis, sat æqualis aut passim leviter verruculoso-inæqualis, albidus. Apothecia 0·4–0·2 millim. lata, tenuia, thallum leviter aut vix superantia, plana, disco fusco-nigro aut nigricante, nudo, margine tenui aut tenuissimo, pallidiore. Hypothecium parte superiore albidum aut pallidum, parte inferiore fulvescenti-pallidum. Excipulum tenue, cartilagineum, pallidum (etiam in margine). Hymenium 0·070 millim. crassum, iodo intense cærulescens, demum obscuratum. Paraphyses simplices, laxe cohærentes, apice leviter clavato-incrassatæ. Epithecium sordide violaceo-fuscescenti-fuligineum, KHO olivaceum. Asci clavati, apice membrana leviter incrassata. Sporæ 8næ, simplices, decolores, ellipsoideæ aut subglobosæ, long. 0·008–0·013, crass. 0·005–0·007 millim. Ad corticem arboris in Roseau Valley in Dominica (cum n. 115). Habitu *L. obscurellam* var. *tenuiculam* Nyl. in memoriam revocat et ei affinis. Gonidia protococcoidea.

21. L. (Biatora) coarctata (Sm.) Nyl. var. elachista (Ach.) Th. Fr.; Wain. *l. c.* 55. In rupe ad Bath Estate in Dominica (n. 142).

(To be continued.)

THE MOSSES AND HEPATICS OF STAFFORDSHIRE.

By James E. Bagnall, A.L.S.

(Concluded from p. 77.)

Webera elongata Dicks. Rare, sandstone rocks by the Churnet, near Alton Towers.—*W. nutans* Schreb. Frequent, Cannock Chase, &c.—Var. *longiseta*. Dimmings Dale, near Alton; Brindley Valley. —*W. annotina* Hedw. Hamstead; Hopwas; Drayton Basset; Oakamore, always barren. — *W. carnea* L. Hamstead; Arley; near Norbury Locks; Ipstones. — *W. albicans* Wahl. Hamstead; Seckley; near Norbury Locks.

Bryum pendulum Hornsch. Hamstead; Kinver Edge; Codsall; Brindley Valley. — *B. inclinatum* Swartz. Dove Dale; Rushton Marsh; Axe Edge End; Hamstead, &c.—*B. lacustre* Brid. Stone quarry, Harborne; streams near Flash; Axe Edge End; Oakamore. — *B. uliginosum* Bruch. Stone quarry near Norbury Park, abundant. — *B. intermedium* W. & M. Walls of canal aqueduct, Hamstead. — *B. bimum* Schreb. Sherbrook Valley; Dove Dale; Aqualate. -- Var. *cuspidatum* Bry. Eur. Walls, canal aqueduct, Hamstead; stone quarry, Norbury Park; Roaches. — *B. erythrocarpum* Schwg. Near Boar's Head, Perry Barr. — *B. murale* Wils. Wall of Railway bridge, Gnosall. — *B. atropurpureum* W. & M. Near Manley Hall and Bassetts Pole, Canwell; Trentham, &c.— Var. *gracilentum* Tayl. With abundant gemmæ near Bassets Pole, Canwell. — *B. cæspiticium* L. Frequent, Hamstead, &c. — *B. argenteum* L. Frequent, Hamstead, &c. — Var. *lanatum* Schpr. Seckley Wood.—*B. capillare* L. Frequent throughout the county. —Var. b. *majus* B. E. On tree-roots near Manley Hall; Arley, &c.—Var. *flaccida* B. E. Rotting trunks, Blithfield Park; Ilam. —*B. pallens* Swartz. Ape's Tor, near Alstonfield, *Rev. A. Ley* c. fr.! Cannock Chase; Ramshorne; Winkshill. — *B. pseudo-triquetrum* Hedw. Dove Dale! Ape's Tor, near Alstonfield, *Rev. A. Ley*! Sherbrook Valley.—*B. turbinatum* Hedw. Rocks near Thor's Cave, *R. G.*

Mnium cuspidatum Hedw. Belmont, *R. G.* — *M. undulatum* Hedw. Seckley Wood, &c., frequent.—*M. rostratum* Schrad. Wetton Valley, *R. G.; Rev. A. Ley*! Hamstead. — *M. hornum* L. Frequent throughout the county. — *M. serratum* Schrad. Wetton Valley, *R. G.; Rev. A. Ley*! — *M. stellare* Hedw. Great Barr, Seckley Wood; Dove Dale; Oakamore, &c.— *M. punctatum* Hedw. Trentham Wood, *R. G.*, frequent. A very large variety in Solomon's Hollow, near Leek. — *M. subglobosum* B. & S. Sherbrook Valley, Cannock Chase.

Aulacomnium androgynum L. In fruit near Alton Towers, *Dr. Fraser*. Frequent in barren state. — *A. palustre* L. Whitmore, *R. G.* Cannock Chase, Trentham; Chartley Moss; Seckley.

Tetraphis pellucida L. Forest Wood, Leek, *Rev. A. Ley*! Trentham; Colwich; Grindley, &c.

Oligotrichum hercynicum Ehrh. Rare, rocks above Flash; Roaches; Hollinsclough.

Atrichum undulatum L. Hamstead, Cannock Chase; Trentham, &c. A variety with two or more fruits from the same perichætium in Seckley Wood.

Pogonatum nanum Neck. Hamstead; Great Barr; Cannock Chase. — Var. *longisetum* Hampe. Near the Rifle Range, Rugeley. — *P. aloides* Hedw. Hamstead, Seckley Wood; Oakamore, &c.— *P. urnigerum* L. Biddulph, Mow Cop, *R. G.* Banks of Dane, near Dane Bridge.

Polytrichum gracile Menz.' Norbury Park, near Gnosall. — *P. formosum* Hedw. (*attenuatum* Menz.). Bagot's Wood; Seckley Wood; Trentham; Oakamore, &c. — *P. piliferum* Schreb. Frequent, Hopwas Wood; Kinver Edge, &c. — *P. juniperinum* Willd. Sherbrook Valley; Brindley Valley; Trentham Park.—*P. strictum* Banks. Sherbrook Valley; Chartley Moss. — *P. commune* L. Cannock Chase; near Flash; Seckley, &c.—Var. *perigoniale* Schpr. Sherbrook Valley, Cannock Chase.

Diphyscium foliosum Mohr. Very rare, Stafford Castle, *Dr. Fraser*!

Fissidens bryoides Hedw. Frequent, Hamstead, &c. — Var. *inconstans* Schpr. Rare, on stones by the Severn, Arley. — *F. exilis* Hedw. Hopwas Wood; Grosty Hill; Chillington Park.— *F. incurvus* W. & M. Hopwas Wood; near Rugeley Junction.— Var. *Lylei* Wils. Quarry by Norbury Park. — *F. tamarindifolius* Brid. Hopwas Wood. — *F. viridulus* Wils. Near Brereton. — *F. pusillus* With. Seckley, *Dr. Fraser.* Seckley Wood. — *F. crassipes* Wils. Boulders in the Severn by Seckley Wood. — *F. decipiens* De Not. Ape's Tor, *Rev. A. Ley*! Seckley Wood; Dove Dale; Hall Dale. — *F. adiantoides* Hedw. Hamstead Canal siding; Seckley Wood.—*F. taxifolius* L. Hamstead; Alton Towers, &c.

Schistostega osmundacea Dicks. Belmont Abbey; Frog Hall; Gravel-pit, Ashley, *R. G.*

Cinclidotus fontinaloides Hedw. Common in Hamps! Dove! *R. G.* Kinver; Arley; Sudbury, &c.

Fontinalis antipyretica L. Trent! Dove! Manifold! Hednesford Pool, *R. G.* King's Bromley, &c.—Var. *gracilis* Lindb. Manifold; Ilam; near Dane Bridge; Severn, near Arley. — *F. squamosa* L. Severn, near Seckley; large pool, Norbury Park, Ilam.

Hedwigia ciliata Dick. Some specimens from Cloud, *R. G.*

Cryphæa heteromalla Hedw. Rare, trees by the Severn, Arley.

Neckera crispa L. Dove Dale! *Rev. A. Ley.* Wetton Valley, *R. G.* Seckley Wood; Flash. — Var. *falcata* Boulay. Abundant in Dove Dale. Mill Dale; Hall Dale. — *N. complanata* L. Dove Dale! *R. G.* Caldon; Frog Hall; Chillington Park.

Homalia trichomanoides Schreb. Trentham! *R. G.* Haughton; Gnosall; Seckley, &c.

Pterygophyllum lucens L. Abundant in Seckley Wood.

Leskea polycarpa Ehrh. On tree-roots, Alrewas; King's Bromley; Dove Dale, &c. — Var. *paludosa* Schpr. Tutbury; Dove Dale; Seckley; Milford.

Antitrichia curtipendula Brid. Cloud, *R. G.*

Anomodon viticulosus L. Beresford; Trentham! Hayley Castle, *R. G.* Wetton Valley, *Rev. A. Ley*! Dove Dale.

Thuidium tamariscinum Hedw. Frequent, Grindley, &c.

Heterocladium heteropterum Bruch, var. *fallax* Milde. Rare, on stones in brook, Seckley Wood, new to Britain.

Thamnium alopecurum L. Blithfield Park; Ellaston; Seckley Wood.

Climacium dendroides L. Sherbrook Valley; near Milford; Dove Dale; Hall Dale.

Isothecium myurum Poll. Seckley Wood; near Codsall; near Leek.—Var. *robustum* Bry. Eur. Alton Towers.

Homalothecium sericeum L. Frequent, Hamstead, &c.

Camptothecium lutescens Huds. Rare, Dove Dale; Hall Dale.

Scleropodium cæspitosum Wils. Dove, near Sudbury; Trent, King's Bromley; Shugborough; Barton. — *S. illecebrum* Schwg. Sherbrook Valley; Hamps, near Caldon; Dove Dale.

Brachythecium salebrosum var. *Mildeanum* Schpr. Seckley Wood; near Trickley Coppice. — *B. glareosum* B. & S. Gospel End Common; near Grindley. — *B. albicans* Neck. Frequent, Hamstead; Trentham, &c. — *B. velutinum* L. Frequent, Hamstead, &c. — *B. rutabulum* L. Common throughout the county. — Var. *longisetum* Bry. Eur. Upper Avenue, Chillington.—Var. *robustum*. Gnosall; Chillington Park; boulders in Severn, Seckley.—*B. rivulare* B. & S. Stream near Flash; Dove Dale; Ellaston; boulders in Severn, Seckley.—Var. *chrysophyllum* Spruce. In grassy places by stream, Sherbrook Valley.—*B. populeum* Hedw. Near Tettenhill; Tettensor; Froghall. — *B. plumosum* Swartz. Manifold, Wetton, *Rev. A. Ley*! Stream near Flash; Dane, near Dane Bridge; near Leek; Seckley.

Eurhynchium myosuroides L. Hamstead; Seckley; Dove Dale. — *E. striatum* Schreb. Newborough; Seckley Wood; Oakamore, &c. — *E. crassinervium* Tayl. Dove Dale. — *E. piliferum* Schreb. Near Gnosall; Arley; Grindley; Shatterford. — *E. Swartzii* Turn. Gospel End; Gnosall; Newborough. — *E. prælongum* Dill. Frequent. In fruit, Chillington.—*E. Stokesii* Turn. Aldridge; Seckley Wood; Chillington.— *E. hians* Hedw. Banks of Trent, Barlaston. *E. pumilum* Wils. Marly bank, Tutbury. — *E. Teesdalii* Sm. Seckley Wood, *Dr. Fraser.*

Hyocomium flagellare Dicks. Near Mayfield; near Ellaston.

Rhynchostegium tenellum Dicks. Hamstead; Seckley Wood.— *R. depressum* Bruch. Stonework of drain, Shatterford.—*R. confertum* Dicks. Blithfield Park; Hamstead; Codsall; Alton. — *R. megapolitanum* Bland. Banks of drain near Arley. — *R. murale* Hedw. Hamstead; Seckley Wood; Alton; Rushton.—Var. *julaceum* Schpr. Manifold, Wetton, *Rev. A. Ley*! Baggeridge Wood; Axe Edge End. A large form near Gnosall, and near Arley. — *R. ruscifolium* Neck. Frequent in streams, &c. A large variety with closely imbricated leaves in Trentham Park.

Plagiothecium denticulatum L. Frequent.—Var. *sulcatum* Spruce. Drayton Bassett.—*P. Borrerianum* Spruce. Hamstead; Trentham; Ramshorne; Dimmings Dale, &c. — *P. sylvaticum* L. Abbot's Bromley; Seckley; Flash, &c. — *P. undulatum* L. Trentham; Seckley Wood; Mayfield; Dove Dale, &c.

Amblystegium confervoides Brid. Dove Dale, *Dr. Fraser.* — *A. serpens* L. Common throughout district.—Var. *majus* Brid. Dove Dale. — *A. radicale* P. Beauv. Daw End, Cotton; Dove Dale.— *A. irriguum* Wils. Alstonfield, *Rev. A. Ley*; Cotton; Barton; Dimmings Dale, &c. — *A. fluviatile* Swartz. Stream, Trentham Park; Blithfield Park.—*A. riparium* L. Frequent, Norbury Park, &c.— Var. *longifolium* Dill. Sherbrook Valley; Tutbury; Barton; Aqualot Mere.

Hypnum aduncum Hedw. Sherbrook Valley; Morridge Tops; near Cloud.—Var. *Kneiffii* Bry. Eur. Near Alstonfield, *Rev. A. Ley.* Norbury Park.—*H. exannulatum* Guemb. Sherbrook Valley; Morridge Tops; Hollinsclough. — *H. vernicosum* Lindb. Sherbrook Valley; bog near Milford. — *H. Cossoni* Schpr. Sherbrook Valley. —*H. revolvens* Swartz. Sherbrook Valley; Seckley Wood; Flash. —*H. fluitans* L. Sherbrook Valley; near Leek; Flash.—Var. *submersum* Schpr. Sherbrook Valley. — *H. uncinatum* Hedw. Blackheath, Winkshill; hill above Flash; Foyt, near Froghall.—*H. filicinum* L. Alstonfield, *Rev. A. Ley*! Sherbrook Valley; Seckley Wood; Trentham; Norbury. — *H. commutatum* Hedw. Sherbrook Valley; Seckley Wood; Baggeridge Wood; Dove Dale. — *H. falcatum* Brid. Sherbrook Valley; Dove Dale. — *H. virescens* Boul. In Dove, Dove Dale.—*H. rugosum* Ehrh. Dove Dale! *Rev. W. H. Purchas.* Hall Dale, abundant. — *H. cupressiforme* L. On rocks and trees, frequent.—Var. *tectorum* Schpr. King's Bromley; Blithfield; Seckley; Chartley Moss; Codsall.—Var. *ericetorum* Bry. Eur. Seckley Wood; Swynnerton Old Park. — Var. *filiforme* Bry. Eur. Seckley Wood; Arley Wood; Norbury Park; Milford.—Var. *elatum* Bry. Eur. Tettenhall Road, near Wolverhampton; Sherbrook Valley; near Froghall; Yeatsall, near Rugeley. — *H. resupinatum* Wils. Alstonfield, *Rev. A. Ley*! Near Wolverhampton; Seckley Wood; Ellaston. — *H. Patientiæ* Lindb. Seckley Wood; Ramshorne; Winkshill; Ipstones; Dointon, near Stowe.—*H. molluscum* Hedw. Frequent on marl and limestone, Dove Dale, *R. G.*— Var. *fastigiatum* Boswell. Dove Dale; Axe Edge End; Mill Dale. This seems very much like the var. *erectum* Bry. Eur. — *H. palustre* L. Dove Dale, *Rev. A. Ley*! Kinver; Seckley; Dane Bridge; Flash, &c.—Var. *subsphærocarpon* Bry. Univ. Winkshill, with type. — *H. ochraceum* Turn. Streams near Flash; Mayfield; near Dane Bridge; Roaches; Oakamore.—*H. chrysophyllum* Brid. Hamstead; Rushall; Sedgeley; Newborough; Weaver Hills. — Var. ERECTUM Bagnall. Dove Dale; Mill Dale. Growing in large matted tufts; stems erect, subpinnate; branches long, erect; leaves slightly toothed at the base; basal cells yellowish opaque; perigynal leaves somewhat squarrose. — *H. polymorphum* Hedw. Sedgeley Limestone Quarry. — *H. polygamum* B. & S. Marsh near Norbury; near Gnosall.— Var. *stagnatum* Wils. Pool in Norbury Park.—*H. stellatum* Schreb. Ape's Tor, *Rev. A. Ley*! Sherbrook Valley; Dove Dale.—*H. cordifolium* Hedw. Sherbrook Valley; Big Moss, near Norbury; Brindley Valley.—*H. giganteum* Schpr. Sherbrook Valley.—*H. cuspidatum* L. Frequent throughout the district.—*H. Schreberi* Ehrh. Gospel End; Cannock Chase; Newborough, &c.—*H. purum* L. Frequent on banks, &c.—*H. stramineum* Dicks. Sherbrook Valley; Brindley Valley; Flash; Roaches.

Hylocomium splendens Dill. Dove Dale, *R. G.* Newborough; Seckley; Trentham, &c.—*H. squarrosum* L. Frequent.—*H. loreum* L. Astbury and Dove Dale, *R. G.* — *H. triquetrum* L. Near Kingston, Cannock Chase, &c.

HEPATICÆ.

Marchantia polymorpha L. Trentham, *R. G.* Frequent, fine fruit, Dove Dale and Seckley Wood.

Conocephalus conicus L. Trentham, *R. G.* Colton, near Rugeley; Seckley Wood; Norbury, &c.

Asterella hemispherica L. Weaver Hill, *R. G.*

Lunularia vulgaris Mich. Colton, near Rugeley.

Targionia hypophylla L. Dove Dale.

Riccia glauca L. Wexford. — *R. crystallina.* Stoke-on-Trent, *R. G.* Pottal Reservoir, abundant.

Frullania dilatata L. Trentham, *R. G.* Seckley Wood; Upper Arley; Dove Dale. — *F. Tamarisci* Mich. Swynnerton Old Park! Dove Dale! *R. G.* Hall Dale.

Lejeunea serpyllifolia Mich. Seckley Wood. — *L. Mackaii* Hook. Wetton Valley, *R. G.*

Radula complanata L. Trentham Park.

Porella lævigata L. Dove Dale and Mill Dale. — *P. platyphylla* L. Dove Dale and Hall Dale.

Lepidozia reptans L. Seckley Wood; Sherbrook Valley; Dimmings Dale; Flash; Roaches, &c.—*L. setacea* Mitten. Dimmings Dale; near Cloud.

Bazzania trilobata Buddl. Dimmings Dale, Alton.

Odontoschisma Sphagni Dicks. Common at Whitmore, *R. G.* Chartley Moss; Brindley Valley.

Cephalozia byssacea Roth. Gospel End Common.—*C. divaricata* Sm. Froghall; Gospel End; Seckley Wood, Perry Barr Common; Barr Common.—*C. stellulifera* Tayl. Footways near Canwell Gate. —*C. bicuspidata* L. Gospel End; Seckley; Barr Common; Trentham, &c. — *C. Lammersiana?* Hübn. Dimmings Dale; Cloud; Sherbrook Valley. — *C. connivens* Dicks. Sherbrook Valley; Dimmings Dale, Alton. — *C. multiflora* Huds. Gospel End Common; Cloud; Dimmings Dale; Oakamore.

Lophocolea bidentata L. Frequent, Seckley, &c.—Var. *cuspidata* Gottsche. Blithfield; Newborough; Seckley; Trentham; Norbury. —*L. heterophylla* Schrad. Frequent, Seckley; Little Aston; Chillington, &c.

Chiloscyphus polyanthos L. Sherbrook Valley; Dove Dale; Brindley Valley.—Var. *rivularis* Nees. Sherbrook Valley; Brindley Valley.

Saccogyna viticulosa Mich. Banks of Severn by Seckley Wood.

Kantia Trichomanis L. Stoke-on-Trent, *R. G.* Cannock Chase; Seckley Wood, Trentham.—Var. *fissa* Raddi. Seckley Wood; Arley Wood; Baggeridge Wood.—*K. arguta* Nees et Mont. Sandy banks, Seckley Wood; sandstone rocks, Kinver Edge.

Trichocolea tomentella Ehrh. Cannock Chase; Seckley Wood; Oakamore.

Blepharozia ciliaris Nees. Sherbrook Valley; Brindley Valley; Salnall Hill, near Milford.

Blepharostoma trichophyllum L. Seckley Wood.

Scapania undulata Dill. Dove, near its source, *R. G.* Stream near Flash; Winkshill, near Froghall; Biddulph.—*S. irrigua* Nees. Gospel End; Newborough; Abbot's Bromley; Arley Wood; Swynnerton; Leek; Cloud. — *S. nemorosa* L. Cloud, *R. G.* Seckley Wood; Arley Wood; Mayfield; Ordesley Brook; Leek.—*S. resupinata* Dum. Morridge Top; Star Wood; Oakamore; Dane, near Dane Bridge. — *S. æquiloba* Schwæg. Rocks, Dimmings Dale; Hall Dale; Dove Dale. — *S. umbrosa* Schrad. Ordesley Wood; Mayfield; Dimmings Dale.—*S. curta* Mart. Gospel End Common; Seckley Wood.

Diplophyllum albicans L. Stoke-on-Trent, *R. G.* Frequent, Caldon, Gnosall, Trentham, &c.

Plagiochila asplenioides L. Trentham Woods! *R. G.* Arley Wood; Seckley Wood.—Var. *minor* Carr. Seckley Wood.

Mylia Taylori Hook. Chartley Moss. — *M. anomala* Hook. Sherbrook Valley; Brindley Valley; Chartley Moss.

Eucalyx hyalina Lyell. Dove Dale; Star Wood, Oakamore; Chartley Moss.

Jungermannia crenulata Sm. Cannock Chase; Winkshill, near Froghall; Canwell. — Var. *gracillima* Sm. Seckley Wood; Arley Wood. — *J. pumila* With. Arley Wood; Dimmings Dale; Dane, near Dane Bridge. — *J. sphærocarpa* Hook. Seckley Wood; Arley Wood; Sherbrook Valley. — *J. cordifolia* Hook. Stream near Flash; Dove Dale.—*J. riparia* Tayl. Boulders in the Severn near Seckley Wood.—*J. barbata* Schreb. Mow Cop, *R. G.* Near Orchard Farm, Axe Edge; Flash; Star Wood, Oakamore. — *J. attenuata* Lindenbg. Walls, Alton Towers; Ramshorne; Dimmings Dale; Star Wood, Oakamore. — *J. Flœrkii* Web. et Mohr. Stream above Flash; Roaches. — *J. quinquedentata* Web. Foxt, near Froghall; near Cloud; Roaches.— *J. porphyroleuca* Nees. Near Leek; Dimmings Dale. — *J. ventricosa* Dicks. Frequent, Trentham, *R. G.* Gospel End; Seckley; Tettensor, &c.—*J. bicrenata* Lindenb. Sandpit near Aldridge; Brindley Valley. — *J. capitata* Hook. Cannock Chase, near Rugeley; Gospel End Common. — *J. incisa* Schrad. Dimmings Dale, Alton.— *J. inflata* Huds. Sherbrook Valley, near Flash; Hollingsclough; Cloud; Gospel End. — *J. turbinata* Carr. Banks of drain, one mile from Arley.

Nardia scalaris Schrad. Frequent, Canwell Gate; Winkshill, Cloud; Roaches, &c. — Var. *major* Gott. On rocks, Star Wood, Oakamore.

Fossombronia pusilla Nees. Sandstone rocks, Tettensor; Kinver Edge.

Blasia pusilla L. Banks of Severn, Seckley; Arley Wood; Dimmings Dale.

Pellia epiphylla L. Frequent, Trentham; Cloud; Roaches, &c.

—*P. calycina* Tayl. Seckley Wood; near Leek; Dimmings Dale; Weeford.

Aneura pinguis L. Sherbrook Valley; Seckley; Gnosall; Dimmings Dale; near Leek. —*A. sinuata* Dicks. Seckley Wood; near Gnosall. — *A. multifida* Gray. Swynnerton, *R. G.* Swynnerton Old Park; Sherbrook Valley.

Metzgeria furcata Dicks. Trentham, *R. G.* Seckley Wood; Dimmings Dale; Dove Dale.—*M. pubescens* Schrad. Rocks about Thor's Cave, *R. G.* Dove Dale.

Anthoceros punctatus L. Little Fenton, *R. G.*

BOTANICAL NOMENCLATURE.

[The *Bulletin of Miscellaneous Information* for November (issued in December) contains an extract bearing on this subject from the address delivered by Mr. W. T. T. Dyer at the meeting of the British Association at Ipswich in September last. Part of this we reprint here, as putting in a compact and telling manner principles which, although obvious enough, seem in danger of being overlooked by certain of our reformers.

We differ, however, from Mr. Dyer in his view that it is almost impossible to reach finality; and it is certainly not the case that "those who have carefully studied the subject" concur in his opinion. If the rule which we have consistently advocated—that of considering as the right name of the plant that by which it was first called in the genus wherein it is placed—something approaching finality would follow; as indeed it would if the rule which we, in common with Mr. Dyer, cannot see our way to accept, were adopted—that of regarding the first specific name as unchangeable, and maintaining it under all circumstances. By the Kew system, advocated by Mr. Hemsley, and more than once dealt with in these pages, no finality can be reached; and to the disregard of priority following on its adoption in such works as the *Genera Plantarum* must be attributed much of the redundant synonymy of which Mr. Dyer rightly complains. Mr. Dyer does not, it seems to us, strengthen his position by citing Mr. Darwin, who was never concerned with systematic work, in support of it. He omits to point out one practical objection to the reforms advocated by certain American botanists: they are so eager to promulgate new views that they do not stop to consider them in all their bearings, and so have later to supersede the names they themselves have proposed. An enormous amount of synonymy is due to this ill-considered course of action.—Ed. Journ. Bot.]

It seems obvious that, if science is to keep in touch with human affairs, stability in nomenclature is a thing not merely to aim at but to respect. Changes become necessary, but should never be insisted on without grave and solid reason. In some cases they are inevitable unless the taxonomic side of botany is to remain at a standstill. From time to time the revision of a large group has to be undertaken from a uniform and comparative point of view. It then often occurs that new genera are seen to have been too hastily founded on insufficient grounds, and must therefore be merged in others. This may involve the creation of a large number of new names, the old ones becoming henceforth a burden to literature as synonyms. It is usual in such cases to retain the specific portion of the original name, if possible. If it is, however, already preoccupied in the genus to which the transference is made, a new one must be devised. Many modern systematists have, however, set up the doctrine that a specific epithet once given is indelible, and whatever the taxonomic wanderings of the organism to which it was once assigned, it must always accompany it. This, however, would not have met with much sympathy from Linnæus, who attached no importance to the specific epithet at all: "Nomen specificum sine generico est quasi pistillum sine campana." * Linnæus always had a solid reason for everything he did or said, and it is worth while considering in this case what it was.

Before his time the practice of associating plants in genera had made some progress in the hands of Tournefort and others, but specific names were still cumbrous and practically unusable. Genera were often distinguished by a single word; and it was the great reform accomplished by Linnæus to adopt the binominal principle for species. But there is this difference. Generic names are unique, and must not be applied to more than one distinct group. Specific names might have been constituted on the same basis; the specific name in that case would then have never been used to designate more than one plant, and would have been sufficient to indicate it. We should have lost, it is true, the useful information which we get from our present practice in learning the genus to which the species belongs; but theoretically a nomenclature could have been established on the one-name principle. The thing, however, is impossible now, even if it were desirable. A specific epithet like *vulgaris* may belong to hundreds of different species belonging to as many different genera, and taken alone is meaningless. A Linnean name, then, though it consists of two parts, must be treated as a whole. "Nomen omne plantarum constabit nomine generico et specifico." † A fragment can have no vitality of its own. Consequently, if superseded, it may be replaced by another which may be perfectly independent.‡

It constantly happens that the same species is named and described by more than one writer, or different views are taken of specific differences by various writers; the species of one are therefore "lumped" by another. In such cases, where there is a choice of names, it is customary to select the earliest published. I agree, however, with the late Sereno Watson* that "there is nothing whatever of an ethical character inherent in a name, through any priority of publication or position, which should render it morally obligatory upon anyone to accept one name rather than another." And in point of fact Linnæus and the early systematists attached little importance to priority. The rigid application of the principle involves the assumption that all persons who describe or attempt to describe plants are equally competent to the task. But this is so far from being the case that it is sometimes all but impossible even to guess what could possibly have been meant.†

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* *Phil.*, 219.

† *Phil.*, 212.

‡ As Alphonse de Candolle points out in a letter published in the *Bull. de la Soc. Bot. de France* (xxxix.), "the real merit of Linnæus has been to combine, for all plants, the generic name with the specific epithet." It is important to remember that in a logical sense the "name" of a species consists, as Linnæus himself insisted, in the combination, not in the specific epithet, which is a mere fragment of the name, and meaningless when taken by itself.

In 1872 Sir Joseph Hooker‡ wrote: "The number of species described by authors who cannot determine their affinities increases annually, and I regard the naturalist who puts a described plant into its proper position in regard to its allies as rendering a greater service to science than its describer when he either puts it into a wrong place or throws it into any of those chaotic heaps, miscalled genera, with which systematic works still abound." This has always seemed to me not merely sound sense, but a scientific way of treating the matter. What we want in nomenclature is the maximum amount of stability and the minimum amount of change compatible with progress in perfecting our taxonomic system. Nomenclature is a means, not a end. There are perhaps 150,000 species of flowering plants in existence. What we want to do is to push on the task of getting them named and described in an intelligible manner, and their affinities determined as correctly as possible. We shall then have material for dealing with the larger problems which the vegetation of our globe will present when treated as a whole. To me the botanists who waste their time over priority are like boys who, when sent on an errand, spend their time in playing by the roadside. By such men even Linnæus is not to be allowed to decide his own names. To one of the most splendid ornaments of our gardens he gave the name of *Magnolia grandiflora*: this is now to be known as *Magnolia fœtida*. The reformer himself is constrained to admit, "The change is a most unfortunate one in every way."§ It is difficult to see what is gained by making it, except to render systematic botany ridiculous. The genus *Aspidium*, known to every fern-cultivator, was founded by Swartz. It now contains some 400 species, of which the vast majority were of course unknown to him at the time; yet the names of all these are to be changed because Adanson founded a genus, *Dryopteris*, which seems to be the same thing as *Aspidium*. What, it may be asked, is gained by the change? To science it is certainly nothing. On the other hand, we lumber our books with a mass of synonyms, and perplex everyone who takes an interest in ferns. It appears that the name of the well-known Australian genus *Banksia* really belongs to *Pimelea:* the species are therefore to be renamed, and *Banksia* is to be rechristened *Sirmuellera*, after Sir Ferdinand von Mueller; a proposal which, I need hardly say, did not emanate from an Englishman.

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* *Nature*, xlvii. 54.

† Darwin, who always seems to me, almost instinctively, to take the right view in matters relating to natural history, is (*Life*, vol. i. p. 364) dead against the new "practice of naturalists appending for perpetuity the name of the *first* describer to species." He is equally against the priority craze:—"I cannot yet bring myself to reject very *well-known* names" (*ibid.* p. 369).

‡ *Flora of British India*, i. vii.

§ *Garden and Forest*, ii. 615.

I will not multiply instances. But the worst of it is that those who have carefully studied the subject know that, from various causes which I cannot afford the time to discuss, when once it is attempted to disturb accepted nomenclature it is almost impossible to reach finality. Many genera only exist by virtue of their redefinition in modern times; in the form in which they were originally promulgated they have hardly any intelligible meaning at all.

THE CAPE HERBARIUM.

[The following account of the origin and history of the Cape Herbarium, reprinted in the *Bulletin of Miscellaneous Information* from the *Cape Times* of October 16th, will be read with special interest at the present time.]

The Cape Government Herbarium has its home in the upper portion of the offices of the Agricultural Department, Grave Street [Cape Town], and is under the charge of Professor MacOwan, the Government Botanist. The collection was originally the private selection made by Carl Zeyher for himself, from the vast quantity of specimens of Cape exsiccata, which he, at first in conjunction with Ecklon, and afterwards alone, collected and prepared for sale to European museums during a period of about thirty years. Zeyher finally visited Europe with a large quantity of scientific material, which he was anxious to place and realise. To raise funds for the voyage, he pledged his herbarium to Dr. Ludwig Pappe, who was an enthusiastic botanist and his friend. On Zeyher's arrival in Hamburg the whole of the saleable specimens were stored in a warehouse uninsured, and by the irony of fate were burned to ashes with the building they contained. Zeyher was helped back to the Cape by an advance from Dr. W. Sonder, and returned almost penniless. He was never able to repay either of the advances, and by a mutual understanding Pappe satisfied Dr. Sonder's claim, and increased by that amount the hypothecation on the herbarium. Ultimately Zeyher made over the collection to Dr. Pappe, who continued to study and use it daily, by the holder's hearty permission, just as if it had been still his own.

Dr. Pappe died in 1862, leaving his family in somewhat straitened circumstances, and possessors of the considerable botanical library and herbaria accumulated during a long life. Unaware of the mode of exploiting either one or the other, the heritors offered the library for sale at an ordinary auction, and the volumes were, with much grudging, bought by the Public Library Management at a shilling apiece. No buyer presented himself for the herbarium, At last Mr. Rawson W. Rawson, the Colonial Secretary, induced the Government to give the family £400 for it. Its value then, before it had deteriorated by bad housing and years of neglect, might have been about £1200. It was stored away, now in one place and now in another, much as oathay is stored, and suffered from the inevitable insects which prey on dried plants and also from rain dripping through the roof of its presumed shelter. Then it was, at Dr. J. C. Brown's suggestion, housed in a room over the Grey Library, and was at least dry. Dr. Harvey was apprised of the Government acquisition, and in 1864 offered to use it in the preparation of his *Flora Capensis*, and select and mount from it a study series of autographically certified types. This he did to the end of Volume III., when the work was cut short by his premature death. Subsequently the collection was returned to the Cape, and this study set was lodged in seven cabinets of the Kew pattern, under direction of Mr. Brown.

As nothing was being done for the collection, not even sublimating the typical study-set to prevent insect raids, Professor MacOwan, who was then living in Graham's Town, addressed Sir Philip Wodehouse on the subject in 1867, pointing out that nothing had been done for its preservation. The collection was no longer in charge of Dr. Brown, whose office of Colonial Botanist had been abolished, and it appeared to be nobody's business to do anything for it, as Mr. Trimen of the South African Museum refused to take it in charge. Professor MacOwan offered to house it at his own expense under control of the Albany Museum, and to supply the needful cabinets at his own charges. The reply was that it was not desirable to transfer the collection to the Eastern Provinces. East and West differences were then very pronounced. The collection was therefore placed in charge of Mr. James McGibbon, the gardener, but when Sir Henry Barkly succeeded Sir Philip Wodehouse, Mr. MacOwan, knowing him to be a well-informed amateur botanist, renewed his application. Sir Henry Barkly, without giving any notice to the custodian, asked to see the collection, and when displayed it was found that insect industry had destroyed scores of Harvey's valuable types. He took care, however, that the custodian should immediately treat the whole study-set in the proper manner with sublimate, so as to stop any further mischief, and generally kept things up to the mark by occasional inspections.

In February, 1881, Mr. MacOwan was appointed curator, in addition to the duty of director of the Botanic Gardens. Nine new cabinets were at once added and filled, and these were increased subsequently by seven. The new curator added his private herbarium of European plants, numbering some 5000 sheets. Until the removal of the collection to the new Agricultural Offices in Grave Street, the herbarium housing arrangements were very inadequate and inconvenient. There is not much to complain of now, though the Government Botanist, in his anxiety for his charge and his scientific enthusiasm, could doubtless point out some shortcomings. It is not very accessible, indeed at the top of the building, and there is always a dread of the recurrence of the catastrophe which overtook Zeyher's collection in Hamburg. Some day, perhaps, it may be removed to a new and truly public museum, into which students will be encouraged and tempted to enter by the very aspect of the building itself.

WESTMEATH PLANTS.

By E. F. and W. R. Linton.

The plants here enumerated are most of them records for District VII. of the *Cybelè Hibernica* (these have an asterisk prefixed), and were observed by us while enjoying the hospitality of Mr. H. C. Levinge at Knock Drin Castle last July. Some of them were detected by the Rev. E. S. Marshall, our fellow-guest for part of the time, and some were pointed out to us by Mr. Levinge himself, whose investigations have done so much to throw light on the Flora of Westmeath. A rainy season had set in, and hindered work during part of our visit; but, thanks to the long preceding drought, many wet localities were unusually accessible, and all the loughs had sunk below their normal level.

Caltha palustris L. var. **procumbens* Beck. *Fide* Mr. Ar. Bennett, who writes, "I should name this *C. palustris* L. γ. *procumbens* (Huth) Beck. MS. in Huth's *Mon. Gatt. Caltha*, 18 (1891) = *C. palustris* var. *radicans* Fries (non Forster)." Shores of Brittas Lake, Knock Drin; with much variation of the shape and serration of the leaf. Some of the plants of *Caltha* rooted more or less freely at the nodes, and to these the above note applies. A greater number showed no sign of rooting at the nodes. — *Aquilegia vulgaris* L. Apparently indigenous by L. Deraveragh, under Knock Body.

Papaver dubium L. var. **Lecoqii* (Lamotte). Near cultivated ground by L. Deraveragh.

**Viola silvestris* Reich. Knock Ross, by L. Deraveragh.

Vicia Cracca L. var. **incana* Thuill. By L. Owel.

**Prunus insititia* Huds. Roadside hedges near Knock Drin.— **P. Cerasus* L. In the Knock Drin Woods; fruiting. Pointed out to us by Mr. Levinge.

Rubus Idæus L. var. **asperrimus* Lees. Knock Drin, growing sparingly with the type.—*R. suberectus* Anders. Wood near Quarry Bog, Knock Drin; and Crooked Wood, near L. Deraveragh.— *R. fissus* Lindl. we saw only where Mr. Levinge had previously detected it, at Drinmore. On the same ground grew a pink-flowered form of *R. plicatus* W. & N. This species also occurred at the Crooked Wood.—**R. opacus* Focke. Crooked Wood, in some quantity. — **R. carpinifolius* W. & N. Crooked Wood. — *R. incurvatus* Bab. Frequent in the neighbourhood of Knock Drin, where it was discovered for the first time in Ireland by Mr. Levinge two years previously; also in the Crooked Wood; very typical.— *R. rhamnifolius* (sp. collect.). Noticed at Knock Drin. — *R. macro-*

phyllus (sp. collect.) var. *Schlechtendalii* (Weihe). In the Knock Drin Wood and the Crooked Wood. — **R. hirtifolius* M. & W. "Apparently a hairy form of *R. hirtifolius*," *W. M. Rogers*. — **R. danicus* Focke. Woods at Knock Drin. "Clearly the same as Focke's *R. danicus*, which he now puts under *R. hirtifolius*," *W. M. Rogers*.— *R. pyramidalis* Kalt. Frequent in the Knock Drin Woods and the neighbourhood generally.—**R. leucostachys* Schleich. Knock Ross; form with spreading sepals (just like a Haslemere plant, Mr. Rogers tells us), Crooked Wood. — *R. mucronatus* Blox. Woods at Knock Drin, not unfrequent; Faunt's Bog, Quarry Bog. —**R. radula* Weihe, towards *echinatoides*. Knock Drin Woods; also var. **echinatoides* Rogers. Knock Body.—**R. Newbouldii* Bab. Crooked Wood, seen in one spot only; rather less glandular than the Cheshire and Shropshire forms, but with no other difference.— *R. fuscus* W. & N., forma. Crooked Wood. — Var. **macrostachys* P. J. Muell. Knock Ross. The type has previously been recorded by Mr. Levinge. — *R. fuscus* × *incurvatus* occurred at one spot in Crooked Wood; the latter bramble is frequent and very characteristic in the neighbourhood. — *R. rosaceus* W. & N. var. **hystrix* W. & N. Knock Drin Woods. A shade-grown form.—**R. thyrsiger* Bab. Woods at Knock Drin; named for us by the Rev. W. M. Rogers, who remarks that this Irish form is undoubtedly Babington's plant, but is rather less armed, much less clothed with hair, and its leaves less regularly serrate. New to Ireland.—**R. scaber* W. & N. Crooked Wood (just the same as the Boar's Hill plant, Berks, *fide* Mr. Rogers); also wooded slope of Knock Ross, and at Knock Drin. — **R. hirtus* W. & N., aggreg. One or two forms of this variable aggregate were found, which have not been more precisely named. Knock Drin; Knock Ross. — *R. dumetorum* W. & N., *α. ferox* Weihe. Roadside hedges, Knock Drin to Mullingar. — *R. corylifolius* Sm., *α. sublustris* Lees. Knock Drin, not common.

Potentilla procumbens Sibth. Shore of L. Deraveragh, under Knock Body. Not certainly known for the county before. With it grew **P. procumbens* × *sylvestris*.

**Rosa sepium* Thuill. In some quantity at the foot of Knock Eyon, and also occurring at the foot of Knock Body. Rare and local in Ireland.—*R. canina* L. var. **urbica* Leman. Knock Body; and var. **dumalis* Bechst., by L. Deraveragh, at Clonave.

Lythrum Salicaria L. All three forms growing together in one spot on the shore of L. Owel.

**Epilobium obscurum* × *palustre*. Bog of Lynn.

Apium nodiflorum Reich. fil. var. **ochreatum* Bab. Shores of L. Owel and L. Deraveragh.

Galium palustre L. var. **Witheringii* (Sm.). Brittas Lake and Bog of Lynn.

Leontodon hispidus L. Knock Eyon; mentioned on account of its great rarity in the district.

Taraxacum officinale Web. var. **udum* Jord. Knock Drin.

Scrophularia aquatica L. var. **cinerea* Dum. At Donore, on L. Deraveragh.—*Veronica Anagallis-aquatica* L. var. **anagalliformis* Bor. Knock Drin; and Scraw Bog, in the same neighbourhood.

Euphrasia officinalis L. var. **Rostkoviana* Hayne. Bog of Lynn, near Mullingar.

Rhinanthus Crista-galli L. var. **fallax* Wimm. & Grab. Bog of Lynn, near Mullingar, in some quantity; much like *R. major* Ehrh. at first sight.

Melampyrum pratense L. var. *latifolium* Bab. Knock Eyon, by L. Deraveragh; a leaf variety that shades off gradually to the type.

**Utricularia intermedia* Hayne. Looked for in several likely localities, but found only on the Tullaghan Bog, by L. Owel; not flowering, though *U. vulgaris* L. was blooming freely both at this point and at the other end of the lough.

**Chenopodium rubrum* L. Occurring on the verge of L. Drin, and also on wet ground usually submerged at Lord Longford's landing-stage on L. Deraveragh.

Polygonum maculatum* Trimen & Dyer. On the shore of L. Deraveragh, under Knock Body; scarce.—Rumex crispus* × *obtusifolius*. Knock Drin.

Salix triandra* L. Ditch-bank between Knock Drin and Quarry Bog. — **S. Caprea* × *viminalis* (*S. rugosa* Leefe). Roadsides, Knock Drin to Quarry Bog and to Mullingar.—S. aurita* × *Caprea* (*S. Capreola* J. Kern.). Donore, L. Deraveragh. — **S. aurita* × *cinerea* (*S. lutescens* Kern.). L. Deraveragh.—**S. aurita* × *nigricans*. Though only foliage was seen, there can be no reasonable doubt that one large strong bush of this hybrid occurred. The stipules and the cut, wrinkling and thick texture of the leaves, as well as their modified blackening, gave good evidence of *aurita*. It is likely enough that this bush was native, judging from its situation; it was not evidently planted, as was the case with the one or two subalpine forms that follow. — **S. aurita* × *repens*. A good intermediate form occurred at the Scraw Bog, and one or two other forms connecting it with *repens*. Our attention was drawn to the plants by Mr. Levinge. — *S. cinerea* L. f. *oleifolia* (Sm.). A very narrow-leaved example (which was certainly not crossed by *S. aurita*, as some *S. oleifolia* has been found to be) occurred on the Bog of Lynn. — **S. nigricans* Sm. and **S. nigricans* × *phylicifolia*. In some quantity by the mouth of the Yellow River, L. Deraveragh, apparently planted; not in a very healthy condition (our host has since found out that this spot was formerly submerged, and was planted with willows, alders, &c., when the level of the lake was lowered).

**Epipactis media* Fr. Woods at Knock Drin; only one specimen seen. Mr. Levinge had in a previous year noticed this species in another part of the grounds, and then, too, only a single specimen. — **Orchis incarnata* L. By L. Deraveragh, under Knock Eyon; Bog of Lynn.

Sparganium ramosum Huds. var. **microcarpum* Neuman. Roadside hollow near Quarry Bog.

Potamogeton alpinus Balb. Drain from L. Drin. Rare and local in the district. — **P. decipiens* Nolte (*P. lucens* × *perfoliatus*). L. Deraveragh; fine and plentiful in one spot between large patches of the parent species.—**P. Friesii* Rupr. End of L. Ennel nearest to Mullingar. Very fine inside and outside the little harbour at Lord Longford's landing-stage, L. Deraveragh.

**Carex divulsa* Good. Knock Ross, by L. Deraveragh. — *C. Goodenowii* J. Gay, var. *juncella* (T. M. Fries). Bog of Lynn.

Agrostis canina L. *f. *mutica;* stoloniferous. Drin More, Knock Drin. — *Phragmites communis* Trin. var. **nigricans* Gren. & Godr. N.W. end of L. Owel. — *Poa pratensis* L. var. **subcærulea* (Sm.). Bog of Lynn.—**Glyceria plicata* Fr. Knock Drin.

Athyrium Filix-fœmina Roth. var. **convexum* Newman. Knock Drin Woods.—*Lastrea Filix-mas* Presl. var. **affinis* Bab. Wood by Brittas Lake, Knock Drin.—Var. **paleacea* Moore. Damp wooded ground, Quarry Bog.

Chara vulgaris L. var. **longibracteata* Kuetz. L. Ennel; so named by Messrs. H. & J. Groves for the Rev. E. S. Marshall. The *Characeæ* in the district were remarkable for their quantity and great variety; probably few districts could make a better show.

Since the above paper was written, the Rev. W. M. Rogers (whom we thank for much help in criticizing our Westmeath brambles, and working at some that are still unnamed) has agreed to our suggested name of **R. viridis* Kalt. for a Knock Drin plant. We have also learnt through Mr. Levinge that the following species or varieties in the above list have not previously been noted for Ireland:—*R. Idæus* var. *asperrimus* Lees; *R. opacus* Focke; *R. danicus* Focke; *R. radula* var. *echinatoides* Rogers; *R. Newbouldii* Bab.; *R. fuscus* var. *macrostachys* P. J. Muell.; and *R. thyrsiger* Bab.

FERNS OF THE CHITRAL RELIEF EXPEDITION.

By C. W. Hope.

Native plant-collectors were sent by Mr. J. F. Duthie, B.A., F.L.S., the Director of the Botanical Department, Northern India, with the Field Force which went to the relief of Chitral Fort in the spring of the year 1895. One of these was placed under the orders and superintendence of Surgeon-Lieutenant S. A. Harriss, I.M.S., one of the medical officers of the force. The collections, made in the months of May, June, and July, were brought to Mr. Duthie for determination, and he has kindly allowed me to see and catalogue the Ferns found among them. The other botanical collector was sent in August to assist Brigadier-General W. Gatacre, who collected from April to September. The collections were sent to the Botanical Department, and the ferns included in them have also been shown to me. From both collections I have compiled the following list, from which it will be seen that twenty-seven species, including two now for the first time named and described, have been found in the Trans-Indus States which were traversed by the Expedition; and that, while all have previously been found in British India, nineteen of them are European, and thirteen British.

Of the new species, *Asplenium* (*Athyrium*) *Mackinnoni* is a large fern which I first observed in the herbarium of the brothers P. N. and V. A. Mackinnon, of Mussooree, gathered in Zehri Garhwál, but which seems to have a pretty wide range in the Himalayas, namely, from Kashmir to Kumaun, and—the intervening thousand miles of Nepál being almost a *terra incognita*—reappearing in Sikkim. This plant has been confused with *A. nigripes* Mett.

Nephrodium (*Lastrea*) *ramosum* I first saw, in 1882, from the Hazára District, in the Punjab, where later on it was gathered in quantity by Mr. E. W. Trotter; it was got in Afghanistan, in the Peiwar Kotul, in 1879, by Sir Henry Collett; it seems, from gatherings by Mr. J. C. McDonell and Major R. W. MacLeod, to be not uncommon in Kashmir; the late Mr. H. F. Blanford, Mr. T. Bliss and I found it in the Simla region; it has been got in the Jaunsar Hill Tract of the Dehra Dún District by Mr. J. S. Gamble; and in the Zehri Garhwál State by Mr. J. F. Duthie. This fern has been called, according to the fancies or theories of collectors, *N. Filix-mas*, var.; *N. Filix-mas* var. *elongata*, and *N. spinulosum* var. *remota*. Even in a dried state it is a remarkably beautiful fern. As I cannot see that it is a form of any described species, I must give it a specific name.

The most remarkable items on the list are *Pteris* (*Doryopteris*) *ludens* Wall. and *Lygodium microphyllum* R. Br., both found by General Gatacre in the Ziárat Valley, the first at 5000 and 8000 ft., and the second at 5000 ft. altitude. *P. ludens* is represented by two sterile fronds, without rhizome (which should be creeping), are (from 8000 ft.) about 2½ in. long by barely 1 in. broad, entire, cordate-lanceolate; and the other (from 5000 ft.) about 4 in. long by 4½ broad, with two pairs of lateral, oblong, rather bluntly pointed lobes, the lowest of which has a pair of subsidiary lobes, deflexed. The stipes, main and secondary rachises are glabrous and almost black; the veins are hidden in the coriaceous lamina. I have compared these specimens with other sterile fronds of *P. ludens*, from the Chittagong Hill Tracts, in Mr. J. S. Gamble's collection, and find them identical, though the cutting varies; and Mr. Gamble agrees. The most westerly extension of this species hitherto known is in Orissa, in the Indian Peninsula, in about 21½° N. lat. and 86° E. long., up to 1000 ft. alt. Other reputed habitats are (in India) the Naga Hills, in Assam, about 750 ft. alt.; the east of Manipur, in about 23° N. lat. and 94° E. long., at an altitude of 5000 ft.; and (elsewhere) Burma, the Malayan Peninsula, and the Philippine Islands. The Ziárat Valley, where General Gatacre got the fern, lies to the south of Chitral, north of the Lowari Pass, in about 35° 25′ N. lat. and 71° 50′ E. long. Snow must lie in the valley for many months of the year at the altitude of 8000 ft., and perhaps even down to 5000 ft.

The other remarkable item in the list is a *Lygodium*,—part of a frond, with only barren pinnæ, the shape of which agrees with those of *L. microphyllum* R. Br.,—a tropical and semitropical fern, not hitherto found in Northern India west of Assam, Bhotán, and the plains of Northern Bengal. *L. pinnatifidum* Sw. is common in

N.W. India from Kumaun to the Dehra Dún District, but I find no record of it farther westward. *L. japonicum* Sw. is rarer in N.W. India, but has been got in the Himalaya and below it from Kumaun westward to the Kangra Valley District, Chamba, and the west of Kashmir, at altitudes of 2300–7000 ft. I have seen no pinnæ of either of those species cut at all like those of *L. microphyllum*, which C. B. Clarke considers the best marked and least variable species of the genus. General Gatacre's plant was got in about 35° 25′ N. lat. and 71° 50′ E. long. at the altitude of 5000 ft. Mr. Gamble, having compared it with the other species, thinks I am right, for, as he says, it certainly comes nearest to *L. microphyllum* (= *L. scandens* Bedd.); but he has found it in N. Bengal and S. India only in swampy places, and says it is an interesting problem in geographical distribution how the above-named two tropical ferns got to the Chitral region.

Cystopteris fragilis Bernh. Many stations, 4500–11,000 ft., *Harriss;* Mirga Hills, 8000 ft., *Gatacre.*

Adiantum Capillus-Veneris L. 5 stations, 6000–8500 ft., *Harriss;* 3 stations, 4000–6000 ft., *Gatacre.*

A. venustum Don. Dir, 5000 ft., Janbatai, *Harriss;* Mirga, 8000 ft., *Gatacre.*

Cheilanthes fragrans Webb & Berth. 4 stations, 4500 ft., *Harriss;* 2 stations, 4000–5000 ft., *Gatacre.*

C. Szovitzii Fisch. & Meyer. Chitral, Darosh to Gurait, 4500 ft., *Harriss.*

Pellæa nitidula Baker. Swat State, Laram Pass, 7000 ft., *Gatacre.*

Pteris longifolia L. Dir, 6500 ft., *Harriss;* below Laram Pass, 4000 ft., Mirga Hills, 8000 ft., *Gatacre.*

P. cretica L. Dir, 6500 ft., *Harriss;* below Laram Pass, 4000 ft., Darosa, 5000 ft., *Gatacre.*

P. aquilina L. Mirga, *Harriss;* Gujàr Valley, 7000 ft., *Gatacre.*

P. ludens Wall. Ziárat Valley, 8000 ft., *Gatacre.*

Asplenium alternans Wall. Dir, 5400 ft., Darosh to Gurait (or Guirat), 4500 ft., *Harriss;* below Laram Pass, 4000 ft., *Gatacre.*

A. viride Huds. Lowári Pass, 11,000 ft., *Harriss.*

A. Trichomanes L. 4 stations, 4000–8000 ft., *Harriss;* Mirga Forest, 9500 ft., *Gatacre.*

A. septentrionale Hoffm. Ziárat, 7200 ft., *Harriss;* Mirga Forest, 9500 ft., *Gatacre.*

A. Adiantum-nigrum L. 3 stations, 5000–7800 ft., *Harriss;* Panjkora Valley, 4000 ft., *Gatacre.*

A. fontanum Bernh. Mirga, 8000 ft., *Gatacre.*

A. Mackinnoni, n. sp. *Rhizome* quasi-erect, clothed, as is also the base of the stipe, with bright castaneous filiform scales. *Stipes* tufted, straw-coloured or pale brown, glabrous except near the base, or with a few scattered scales for some inches upwards, 8–20 in. long. *Frond* subdeltoid or almost rhomboidal (lowest pair of pinnæ slightly shorter than next pair above), 13–23 in. long (average of sixteen measured, 18¾ in.) by 8–18 in. broad (average of twenty measured, 12¾ in.), bipinnate, glabrous. *Pinnæ* about 20 pairs, rarely more or less, distant, subpatent or ascending at an angle of less than 45°, lowest few pairs sometimes widest at one-third from main rachis, others hardly diminished towards base, and with lowest pair of pinnules sometimes elongated; always acuminate, 6–11½ in. long by 1½–3¾ in. broad. *Pinnules* 20 or more pairs on longest pinnæ of large fronds, at the base cut away on the inferior side, and slightly auricled on superior side, ⅜–½ in. broad at base; cut down two-thirds towards costa into 6–12 lobes with two or more teeth each, gradually narrowing and sometimes blunt at apex, decurrent on rachis with sometimes a broadly winged base. *Texture* herbaceous. *Colour*, when dried, pale olive-green. *Veins* of pinnules pinnate, and veinlets forked in the lobes, pinnate in lowest. *Sori* mostly one on superior veinlet of each lobe, near to or at some distance from costa of pinnule, but more numerous in large lobes, and in lowest lobes of large pinnules; *involucres* large, straight, athyroid or hippocrepiform, and sometimes severed at the curve.

Hab. ASIA:—Trans-Indus Protected States: Baraul, 8500 ft., *Harriss*, 1895. Kashmir, West, 6000–10,000 ft., *Trotter*, 1888; *MacLeod*, 1891; *McDonell*, 1892–93; *Duthie*, 1893. Punjab: Chamba, 7000–9000 ft., *Baden-Powell*, 1879; *McDonell*. Simla Region, 8200 ft. and upwards, *Blanford*, 1885; *Hope*, 1886; *Bliss*, 1890, 91. N.W. Provinces: Mussooree or neighbourhood, *Herschel*, 1878. Tehri Garhwál State, 8000 ft., *P. W. & V. A. Mackinnon*, 1879; 10,000 ft., *Davidson*, 1875; 8000–9000 ft., *Duthie*, 1883; 7500 ft., *Gamble*, 1884. Kumaun, 9000–10,000 ft., *Duthie*, 1884. Sikkim: Phulloot, 11,500 ft., *Levinge*, 1880 (Gamble's No. 8538).

A large broad-spreading fern, with a long stipe, and when dried reminding one of *Nephrodium marginatum* of Wallich, and me sometimes of *N. ramosum*. The scales at base of stipe are like those of *A. nigripes* Mett., but pale in colour, as is the frond. The sori do not lie in parallel rows near the costa, like those of *A. nigripes*, but are generally apart from it, curving outwards, and the involucres are generally much more curved. No doubt specimens of this fern are to be found in *herbaria* mixed with *A. nigripes*, but I think they ought to be separated. I erroneously entered it in the Saharunpur Catalogue as *A. selenopteris* Kunze, but I must now separate them, and I name the species after the brothers Mackinnon, of Mussooree, in whose collection I first saw it, and whose specimens are the largest I have seen, and because they have largely added to the number of species of ferns found westward of Nepál, and have found several species which are entirely new.

A. dentigerum Wall. Mirga, 8500 ft., Lowári Pass, 10,000 ft., *Harriss.*

A. Ceterach L. 3 stations, 4000–7000 ft., *Gatacre.*

Aspidium Lonchitis Sw. Ziárat, 11,000 ft., *Harriss.*

Nephrodium Filix-mas Rich. Lowári Pass, 9500 ft., *Harriss.*

N. odontoloma Moore (*Lastrea Filix-mas* var. *odontoloma* Moore, Beddome's Handbook, Suppt. 55). 6 stations, 6300–10,000 ft., *Harriss*; Mirga, 8000 ft., *Gatacre.*

N. ramosum, n. sp. *Rhizome* procumbent, ligneous, densely clothed, as are the bases of the stipes, with large broad suddenly-acuminate hair-pointed pale brown self-coloured scales. *Stipes* 6–17 in. long, stout, pale brown or straw-coloured, sometimes mottled. *Frond* 10–24 in. long by 8–13 in. broad, bipinnate in lower part; *rachises* slightly winged in upper pinnæ; lowest pinnæ as long or longer than the next above, and the lowest four or five pairs but little diminished in length, diminution thence gradual to apex; rachises straw-coloured, or pale brown, or pale green, more or less clothed with pale coloured linear scales and fibrils, but sometimes glabrous; frond plumose in appearance. *Pinnæ* ascendant, 16–30 pairs, besides the deeply pinnatifid apex, distant near base of frond, lowest 5–9½ in. long by 2–4¼ in. broad. *Pinnules* 12–20 pairs, on the lower pinnæ much longest on the lower side, largest towards the middle and then up to 2½ in. long, none ½ in. broad, and all distant, falcate; oblong for two-thirds their length and then acuminate, cut down to a winged rachis into 10–15 segments; segments in large fronds lobed on both sides, and lobes toothed. *Texture* herbaceous. *Colour* pale green, but drying sometimes pale brown. *Veins* pinnate in segments, and forked in larger lobes. *Sori* generally absent in lowest two or three pairs of pinnæ, but extending sometimes almost to the apices of fronds and pinnæ, up to six in lowest lobes, medial. *Involucres* thick, moderate-sized, persistent, brown; *sporangia* pale green when young.

Hab. ASIA:—Afghanistan: Peiwar Kotal, 8000 ft., *Major* (now *Sir Henry*) *Collett*, 1879. Trans-Indus Protected States (on the route to Chitral), 7200–10,000 ft., *Harriss; Gatacre*, 1895. Kashmir, West, 4000–10,000 ft., *Trotter*, 1888; *MacLeod*, 1891; *McDonell*, 1891 & 1894; *Duthie*, 1892. Punjab: Hazára District; Himalaya, between Abbotabad and Murree, 7000–8500 ft., frequent, *Trotter*, 1889–90. Simla Region, 8500–9000 ft., *Blanford*, 1884; *Hope*, 1886; *Bliss*, 1891. N.W. Provinces: Jaunoar, 8000 ft., *Gamble*, 1892–95. Zehri Garhwál, 8000–9000 ft., *Duthie*, 1883.

The characteristic features of this fern are the broad frond, hardly ever reduced at the base; the very long, broad, and distant pinnæ; the very long and narrow pinnules; the pale green colour of the frond, and the almost invariably pale colour of the scales. The distribution seems to be confined to the Western Himalaya and the mountains immediately to the westward of British India; but in colour it is similar to the less compound *N. pallidum* of Bory, which fern I consider to be quite distinct from *N. rigidum* Desv., and to be near *N. odontoloma* Moore. Some specimens of *N. ramosum* approach *N. odontoloma*, and others *N. marginatum* Wall., which varies a good deal in cutting and texture. *N. odontoloma* never is broadest at base, as is *N. ramosum* almost invariably. Perhaps the nearest congener of this species is *N. nemoralis*, n. sp., Hope MS., a fern with a more limited range, hitherto called *N. spinulosum* Desv. var. *remota;* but that species is never truly bipinnate, and it has always a short stipe and dark-coloured scales.

N. molle Desv. Below Laram Pass, 4000 ft., *Gatacre.*
Polypodium Phegopteris L. Mirga, 9500 ft., *Harriss.*
P. Robertianum Hoffm. Mirga, 7500 ft., *Gatacre.*
Lygodium microphyllum R. Br. Ziárat Valley, 5000 ft., *Gatacre.*

NEW AFRICAN PLANTS.

By A. B. Rendle, M.A., F.L.S.

The types of the following species will be found in the British Museum:—

Pentas quadrangularis, sp. nov. Herba glabra caule quadrangulari, foliis parvis lanceolatis sessilibus uninerviis; floribus 4-meris in foliorum axillis sæpissime solitariis, subsessilibus; calycis segmentis triangulari-subulatis plus minus æqualibus, basi dente brevi glanduliforme utrinque instructis; corollæ tubo elongato, apice infundibuliforme, lobis subæqualibus patentibus lanceolatis vel ovato-lanceolatis acuminatis; antheris ore corollæ piloso sessilibus, cuneato-oblongis, glabris; stylo filiforme, exserto, stigmatibus binis linearibus; fructu late ovato 8-costato a disco conico coronato; seminibus numerosis glabris trilateralibus in placentis magnis semi-submersis.

Hab. Near Lake Stephanie, June 27th, 1895, *Donaldson Smith.*

The markedly four-angled stems are about 1 line thick; the opposite leaves, which reach about 1 in. in length by ¼ in breadth, are united by a narrow stipular band bearing short setæ. The flowers are solitary, rarely more than one, on very short pedicels, in the leaf-axils. The narrow calyx-segments vary in length from 1½ to 2½ lines; all four may be of different lengths, or three may be equal and one slightly shorter, &c. The slender corolla-tube is 3¾ in., of uniform length, the slightly enlarging funnel being 4 lines long, and the lobes 6–7 lines long by 2½–3 lines broad. The æstivation of the lobes is induplicate-valvate. The anthers are 2½ lines long, and become gradually broader from the base upwards; they are attached dorsally to the corolla-tube a little above their base. The ovary is crowned by a shallowly rounded disc, from the centre of which springs the long style. The numerous small 3-sided seeds are light brown in colour, and half-embedded in the large greenish placentas which are attached to the septum above the base of the fruit. The fruit is about 4 lines long by 2¾ broad, is greenish and smooth, except for the eight longitudinal ribs. Five calyx-segments persist for some time, but finally disappear, leaving one only.

Is apparently near *P. longituba* K. Sch. (e descript. in *Pflanz. Ost-Afrik.*), but differs in having lanceolate, not oblong leaves, and a much shorter corolla-tube, the latter measuring 16 cm. in *P. longituba*, which is also more or less hairy, the leaves being described as subtomentose.

Cycnium erectum, sp. nov. Caule lignoso erecto alto tereti hispido superne hispidulo et parce ramoso, ramis brevibus; foliis sessilibus lanceolatis vel e basi cuneatis suboblongis, uninerviis, margine supra basin integram crenato-dentatis, utraque facie hispidis; floribus in parte caulis superiore racemosis. oppositis, bracteis foliis similibus sed minoribus pedicellos tenues subæquantibus; bracteolis lineari-lanceolatis sub calyce insertis velut huic et pedicellis hirsutulis; calyce tubuloso supra medium obliquo apice æqualiter 5-dentato; corollæ atrate purpureæ tubo calycem duplo superante, labio postico vix ad medium bifido, antico tripartito, lobis late ovatis; antheris sublanceolatis, appendice tenui acuta; capsulis oblongis. apiculatis.

Hab. Sheik-husin, Sept. 21st, 1894, *Donaldson Smith.*

The long stem, which is broken off at the base, is 3½ ft. long, and 2¼ lines thick. The cortex and outer layers of the wood are tinged with purple. The upper portion bears a few short branches (about 6 in. long). The shortly hispid leaves reach on the main stem 2 in. in length, with a breadth of 10 lines. The raceme is 1 ft. long. The flower-pedicels are ½ in. long. becoming ¾ in. in the fruit. The bracteoles are nearly 2 lines long. The calyx-tube is 7 lines, and its acuminate teeth 1 line long; a lateral incision to just above the middle makes it oblique. The calyx shows the same deep blue colour as the corolla, the tube of which is 1¼ in. long, less than 1 line in diameter in the lower half, but widening to about 1¼ lines at the insertion of the stamens. The delicately veined lobes are 8 lines long by 6 broad. The pointed anthers are nearly 2½ lines long. The unripe fruits (¼ in. long) retain as a blunt apiculus the base of the style.

Recalls the South African *C. racemosum* Bth., but is not so much branched. It is at once distinguished by the greater length of the corolla-tube in proportion to the calyx, and by the rounded teeth of the leaf-margin.

Graderia speciosa, sp. nov. Frutex ramis griseis tetragonis juvenilibus hirsutulis; foliis parvis decussatis obovatis utrinque scabridis subsessilibus; floribus speciosis axillaribus breviter pedicellatis, bracteis binis linearibus acutis; calyce hirsutulo campanulato æqualiter 5-fido, limbis ovatis acutis; corolla speciosa super tubum breve subito expansa, lobis planis suboblongis, præter anticum, qui minor est subæqualibus; staminibus glabris securiformibus; 2 posticis longioribus cum anthera 1-loculare trapezoidea basifixa, anticis cum anthera altera ad calcar longum reducta; stylo longo in stigmate subclavato terminante; ovarii loculis æqualibus; capsulo oblongo obtuse apiculato.

Hab. Galla Country. Darar and Sheik-husin, Sept. 1894, *Donaldson Smith.*

The hard woody shoots bear numerous lenticels. There are several buds, generally three, in a vertical row above each leaf-scar, all of which may remain dormant, or one (the median), rarely two, may develop. The small leaves are found in the youngest shoots only; they are 7–12 lines long, 4–5 broad. The flowers spring a little distance above the leaf-insertion; the short pedicels are ¼ in.

long, the narrow bracteoles immediately beneath the calyx 2 lines. The calyx is 4 lines long, the subspreading segments 2 lines. The corolla is 1½ in. long, and about 1 in. in vertical diameter at the open mouth. The short tube is ¼ in. long, the rounded-oblong lobes 4–5 lines, the anterior one being smaller and shorter than the others, of which the lateral are slightly the broader. The two longer filaments are 10 lines long, the anterior slightly shorter. The horizontally directed anthers are 3 lines long, they end in a short point, and bear on the upper surface a longitudinal furrow with a line of short hairs. The style is 1¼ in. long. The smooth dull brown capsule is 4½–5 lines long; only one of the two valves was present, so that it is impossible to say whether the fruit is symmetrical or not. The seeds had all fallen.

An interesting addition to the genus, which hitherto included only the South African *G. scabra* Benth. and the Socotran *G. fruticosa* Balf. fil. In habit it approaches the latter, but is distinguished from both its allies by its much larger, more open flowers. The complete disappearance of the sterile half of the anther in the posterior stamens is also of interest.

Thunbergia longisepala, sp. nov. Volubilis, glabra, caule lignoso, foliis parvis oppositis petiolatis cordatis; floribus paucis axillaribus, pedunculis validis folia plus duplo superantibus; bracteis ovali-oblongis 5-nerviis; calycis segmentis longis linearibus apice emarginatis, siccis involutis. dorso hispidulis; corollæ tubo sesquipollicari superne infundibuliformi, lobis æqualibus obovato-oblongis; antheris 4 subsessilibus, subæqualibus, oblongis, appendice brevi triangulari instructis, et basi spinulosis, polline sphærico cum vittis transversis ornato; ovario cum disco annulari cincto, stylo filiforme, stigmate bilabiato.

Hab. Taita Plains, *Scott Elliot*, No. 6166.

The terete light-coloured stem is less than 1½ lines in thickness. The thin leaves on the young shoots are about ¾ in. long, and as broad; the filiform petiole is slightly shorter; the rounded apex is often apiculate. The stout peduncle is 2½ in. long; the large bracts are ¾ in. by scarcely ½ in. The calyx has a very short broad cup; the segments, which are narrow from a broader base, are ½ in. long. The corolla-tube is nearly 1½ in. long and 1 line in diameter, expanding to about twice the diameter 2 lines below the lobes, which are 3–4 lines long. The filaments are ½ line long; the two smaller anthers 3 lines, the larger 3⅓ lines long; a line of short hairs indicates the line of longitudinal dehiscence, and the rounded base bears a cluster of short spines. The filiform style is 1½ lines long.

A very distinct species, recalling some forms of *T. affinis* S. Moore, from which, however, it is at once distinguished by its very narrow corolla-tube, long calyx-teeth, sessile stamens, and cordate leaves.

Duvernoia speciosa, sp. nov. Fruticosa, ramis elongatis teretibus; foliis petiolatis ovatis interdum ovato-lanceolatis, glabris; floribus speciosis in axillis bractearum oppositarum cymosis; calyce

pæne ad basin 5-partito, segmentis lineari-acuminatis ciliolatis; corollæ tubo super basin tenuem constricto tum subito inflato, antice gibboso, labio postico rectangulo-oblongo, super genitalia incurvato, labio antico patente usque ad medium 3-partito lobis oblongis apice rotundatis; antheris superpositis brevissime calcaratis.

Hab. Sheik-husin, Sept. 21st, 1894, *Donaldson Smith.*

The longest branch measures 3 ft. below the terminal inflorescence; the lower part is covered with a thin, papery, brownish, easily peeling bark. The largest leaves have a blade 3 in. in length by 2 in breadth, with a slender petiole of 1½ in. On the branchlets below the inflorescence they are about 1 in. long by ½ in. broad. The number of large bright-coloured flowers gives the inflorescence a striking appearance. The individual flowers are almost sessile, forming crowded cymes, which again are almost sessile in the axils of the bracts. The bracteoles are linear-lanceolate, slightly hairy, and ¼ in. or more in length. The calyx is 4 lines long; the corolla-tube is nearly ½ in., the slender erect portion below the constriction 4 lines; the posterior lip has a truncate apex, and is ¾ in. long by 5 lines broad; it arches over the slightly protruding stigma and anthers; the spreading lower lip is ¾ in. long, the lobes 4 lines broad. The stamens are nearly 1 in. long; of the oval oblong anthers, the upper is placed transversely on the top of the filament, the lower is fixed to the side at almost a right angle with the upper; they are 1¼ lines long; the delicate spur is less than a quarter their length. The pollen-grain is banded. The rather slender ovary is 1¼ lines long, the filiform style 1 in. The two ovules in each loculus are alternately superposed.

Near the S. African *D. adhatodoides* E. Mey., but has rather larger flowers, differing in their much longer calyx-teeth, and the shape of the corolla, especially in the truncate posterior lip, and the larger more oblong lobes of the anterior, and also in the spurred anthers.

Euphorbia tetracantha, sp. nov. Humilis, fruticosa, glaucescens, ramis 4-angulatis, pulvinis decurrentibus aculeis quaternis horridis; cymis ramorum apice binis axillaris oppositis; bracteis minutis ovatis; cyathiis 3, sessilibus, externe breviter papillosis, mediana ♂ breviter et late campanulata, lateralibus cyathiformibus flore centrali ♀, floribus ♂ circumdatis; involucris segmentis 5 brevibus subfimbriatis, glandulis in annulum 5-undulatum crassiusculum coalitis; floribus ♂ squamis apice fimbriatis interspersis; ovario pedicellato, stigmatibus tribus indivisis coronata.

Hab. Shebeli, Sept. 4th, 1894, *Donaldson Smith.*

6 in. high. The spreading branches springing from a short stout woody stem, and subfleshy (2 lines thick). Their four angles are determined by the hard decurrent pulvini, each of which bears four stiff projecting sharply pointed spines, two lower longer ones reaching 10 lines, and two upper slenderer and shorter less than half the length. The cyathia are borne in opposite sessile cymes, three in each. The central, male, is slightly shorter and broader than the two lateral (scarcely 1 line long by more than 1 line broad

at the mouth); the short involucre-segments are subquadrate in shape and fimbriate at the top, the glands larger and more fleshy than in the bisexual cups; in both cases the glands bear on the inside a shallow transverse keel. The filaments and pedicels are glabrous; the fimbriate scales equal the latter in length. The lateral cups (1 line long) bear each at the base a pair of small adnate bracts; the short involucral segments are broader than in the male cup, and rounded with a slightly fimbriate margin; the pedicel of the female flower is ½ line long.

Near *E. triacantha* Ehrenb. apud Boissier, but is at once distinguished by the four-thorned pulvini.

Kniphofia insignis, sp. nov. Foliis pluribus bipedalibus herbaceis linearibus superne sensim angustatis, nervo mediano plicatis, margine minute scabridula, racemum speciosum late cylindricum haud attingentibus; bracteis albidis acuminatis pedicellos perbreves plus triplo excedentibus; perianthio tubuliforme sæpe curvato super ovarium constricto, dentibus brevibus ovatis; staminibus semper inclusis, stylo exserto.

Hab. Sheik-Mahomet, Nov. 13th, 1894, *Donaldson Smith.*

The fleshy stalk is 2 ft. 4 in. long below the raceme, with a diameter at the base of about ⅓ in. The long narrow thin leaves are 2 ft. in length, and about 6–7 lines broad at the base. The raceme, which becomes dense-flowered above, is 10 in. long. The pointed scarious bracts are 3–4 lines long, the flower-pedicels 1 line. The perianth-tube is 15 lines long, the segments 1½ lines; the diameter of the tube in the dry state is 3 lines. The stamens are about three-fourths the length of the perianth; the style becomes exserted nearly 2 lines beyond the mouth.

Is near *K. Schimperi* Baker, which it closely resembles in leaf-characters, but is distinguished by its much larger flowers and denser raceme.

It may be worth calling attention to the fact that *Kniphofia elegans* Engl. in *Hochgebirgsflora*, p. 162, is a synonym of *K. Schimperi* Baker, published in this Journal nearly twenty years before (*Journ. Bot.* 1874, p. 4), and based on Schimper's Abyssinian plant No. 1200 ("1863–8"), which Engler also quotes as authoritative for his own species. By a strange coincidence *K. Schimperi* Baker is omitted from the list of Kniphofias in Schinz & Durand's *Conspectus*, though the other species described by Baker in the same paper are included; Schimper's No. 1200 is referred to *K. elegans* Engl. As a set-off Mr. Baker is credited with a species *K. unifolia* "in *Britt.* Journ. of Bot. (1885), p. 298." No such species occurs on the page referred to, nor have I been able to discover it elsewhere. Is *K. ensifolia* Baker intended? This is described on the page in question, and included in the *Conspectus* in its proper place, with a correct reference.

Albuca Donaldsoni, sp. nov. Glabra, bulbo . . . . , foliis basi membranaceis lanceolatis, superne lineari-acuminatis, siccis involutis et reflexis; scapo valido cum racemo denso ovato, folia excedente, bracteis longissimis supra basin triangularem filiformibus, pedicellos longos excedentibus; floribus inter mediocre, perianthii segmentis albidis oblongo-ligulatis, externis cum 5 internis cum 3 vittis viridibus notatis; staminibus 6 fertilibus, perianthio brevioribus, filamentis triangulari-subulatis, antheris oblongis, basi sagittatis; stylo tenui, ovarium oblongum trisulcatum æquante.

Hab. Low-lying country east of Shebeli River, Dec. 24th, 1894, *Donaldson Smith.*

The plant, which has been cut off above the bulb, is 13 in. high; the stout stem is sheathed below by the membranous bases of the leaves, 4–5 in. long, ¾–1 in. broad, passing above into the long (6 in.) tapering upper part, which is reflexed about the middle and involute. The crowded raceme is nearly 6 in. long by 3½ in. at its broadest. The slender bracts, which become rapidly filiform above their greenish bases, are in the lower part of the raceme more than 2 in. long, exceeding the ascending pedicels, which are a little over 1½ in. long. The flower is 8 lines long; the outer slightly broader segments have a cucullate apex, less marked in the inner series, and are 2 lines broad. The filaments are 4½ lines long, the versatile anthers 3 lines long, the ovary a little over 3 lines.

Its crowded inflorescence and long slender bracts recall *A. longibracteata* Engl., but it differs in its more condensed raceme of larger differently coloured flowers, as well as in its leaf-characters. In size the flowers approach those of *A. abyssinica* Jacq., which, however, are fewer in number and banded with red, while the leaf above the base is linear, tapering, plicate, and suberect.

Gloriosa minor, sp. nov. Herba minor erecta glabra, foliis supra caulis flexuosi medium numerosis, inferioribus exceptis verticillatis, sessilibus haud amplexicaulibus, lineari-falcatis acutis haud cirrhiferis plicatis; inflorescentia abortu uniflora, flore terminali nutante; petalis coccineis arcte reflexis e basi tenui anguste lanceolatis acutis; stylo tenui reflexo ad medium trifido, stamina excedente.

Hab. A little west of Shebeli River, 2000 ft. alt., Dec. 6th, 1894, *Donaldson Smith.*

A charming little plant, the largest specimen of which is not 8 in. high. The slender flexuose stem is rounded and striate, and bears about 20 leaves just above its middle, covering a length of about 1½ in.; the lowest leaves are longest, reaching 2¾ in. in length, with a breadth of 5 lines; the uppermost are only 1¼ in. in length and 1 line broad. The peduncle bears above its base a bract, resembling the uppermost leaves, which subtends a short aborted branch. The flower-pedicel is 2 in. long. The crimson petals are 1½ in. long by ¼ in. broad above the middle. The slender spreading staminal filaments are 7 lines long, the arcuate versatile linear-oblong anthers 3 lines. The slender style is bent back at its origin, and about the middle separates into 3 filiform arms; the whole length is about 10 lines.

Easily distinguished from the other species of the genus by its small size, crowded linear leaves, and solitary flower.

COL. HENRY MAURICE DRUMMOND-HAY.

A FINE example of the type of naturalist with wide interests, now too rare, passed away on January 3rd, 1896, in the person of Col. H. M. Drummond-Hay, of Seggieden, near Perth. Born in 1814, he was a son of Admiral Sir Adam Drummond, his mother being a daughter of the fourth Duke of Atholl. He assumed the name of Hay on his marriage with the heiress of Seggieden. He joined the 42nd Highlanders in 1832, and remained in the army till 1851, serving much of the time abroad, chiefly in Malta, the Bermudas, and Nova Scotia. Returning to Perthshire, he served from 1853 to 1872 in the Perthshire Reserve Forces.

A strong taste for natural history showed itself from an early period of his life, and was not lessened to its close. Probably most of his interest was given to birds, especially to their habits of nesting and migration, his residence abroad being fully utilised in such studies; but he made an extensive collection of fishes, illustrated by drawings, at the Bermudas (which was sent by him to the American Fishery Commission in 1860, and was much commended); and he was also keenly interested in the land and fresh-water mollusca.

Botany also received attention from him, though in a less degree; and he gave valuable aid in the exploration of the flora of Perthshire, from the depths of the lochs to the hilltops. His published papers, most of which appeared in the *Scottish Naturalist*, of which he was a warm supporter, chiefly relate to the birds of Scotland; but among them we find a few on botany, such as "An improved Method of Preparing Plants for the Herbarium" (1872); "On the Flowering Plants of the Carse of Gowrie, in Perthshire" (1874); "Notes on a Botanical Excursion to the Breadalbane Mountains, Perthshire" (1875); and "Effects of the past Winter (1878–79) and present Summer (1879) on Hard-wooded Plants." All these show close and accurate practical acquaintance with botany. His name was commemorated by his friend and co-worker, Dr. Buchanan White, in the variety *Drummond-Hayi* of *Rhinanthus Crista-galli* L., first observed in a joint excursion in Perthshire. He took a very active part in promoting the welfare of the Perthshire Society of Natural Science; and the admirable Museum formed by the Society owes much to his labours on its behalf. He was for several years its Honorary Curator, and he made the office no sinecure, spending much time and care in the collections, the birds and nests being his own peculiar charge. He had the great pleasure of living to witness the successful completion, and formal opening by Sir William Flower during the present winter, of an extension that has more than doubled the original size of the Museum.

J. W. H. TRAIL.

SHORT NOTES.

Note on Pavonia. — Dr. Garcke, in the current number of Engler's *Botanische Jahrbuch* (Feb. 11), has an interesting paper, "Ueber einige Malvacengattungen," in which he makes remarks on the four genera of the family—*Sida*, *Anoda*, *Pavonia*, and *Hibiscus*. His notes on certain obscure species of *Sida* are particularly worthy of notice, and will be a great help in any future work on the subject. On certain points I can hardly accept Dr. Garcke's conclusions, and in *Pavonia* he seems scarcely to have exhausted the literature of the subject. Speaking of this genus (*l. c.* 392), he criticises the number of species enumerated in the Kew Index, and says that eight described since must be added to these. He seems to take no note of *P. calyculina* Frapp., *P. fraterna* Cordem. (both from Bourbon), *P. Schwackei* Gürke (from Brazil), *P. melanommata* Rob. & Seaf. (from Mexico), *P. opulifolia* and *P. Morongii* S. Moore (both from South America). There is possibly some good reason for these omissions, but it is desirable that this should be made clear.—E. G. Baker.

Wilts Records, 1895. — The principal additions have been made by the Rev. W. Moyle Rogers, who has also in part recast our existing list of *Rubi*. All the plants are new for S. Wilts, the additions to the county flora being marked (W.). I have had the usual kind help of specialists in verifying the critical plants:— *Isatis tinctoria* L. (W.) 5. Farley, *Henderson*. — *Stellaria umbrosa* Opiz. 9. Dinton; glabrous and hairy forms together (v. *Journ. Bot.* 1889, 52).—*Rubus plicatus* W. & N. (W.) 9. Wardour, *Rogers*. — *R. erythrinus* Genev. (W.) 1. By canal between Limpley Stoke and Freshford, *C. Bailey*.—*R. nemoralis* P. J. Muell. (W.) 9. Dinton, *Rogers*. — *R. Selmeri* Lindeb. (W.) 2. Langley Fitzurse, *Rogers*. 5. Redlynch. 9. Swallowcliffe and Wardour, *Rogers*.— *R. argentatus* P. J. Muell. (W.) 5. Clarendon ("perhaps var. *robustus*," W. M. R.). — *R. Schlechtendalii* Weihe (W.). 9. Compton, Dinton, and Wardour, *Rogers*. — *R. leucostachys* var. *angustifolius* Rogers (W.). 5. Grinstead. 7. Allington, *W. A. Clarke*. 9. Hurdcott. — *R. radula* var. *anglicanus* Rogers (W.). My own and probably other *radula* notices are to be referred to this form.— *R. obscurus* Kalt. (W.) 2. Woods ascending to Conkwell, *C. Bailey*. —*R. hystrix* W. & N. (W.) 9. Wardour, *Rogers*. — *R. rosaceus* var. *infecundus* Rogers (W.). 9. Wardour, *Rogers*. — *R. Kaltenbachii* Metsch (W.). 9. Compton. — *R. dumetorum* var. *tuberculatus* Bab. 1. Limpley Stoke, *Rogers*.—*R. sublustris* Lees. 9. Dinton, Semley, and Swallowcliffe, *Rogers*.— *R. corylifolius* var. *cyclophyllus* Lindeb. (W.) 4. Poulton. *Marlb. Coll. Hb.* 9. Swallowcliffe, *Rogers*. 10. Harnham.—*R. tenuis* Bell Salt. 9. Compton, *Rogers*.— *Potentilla procumbens* × *reptans* (W.). 10. Alderbury (*fide* Focke).— *Rosa glauca* var. *Watsoni* Baker (W.). 6. Wilbury. — *Epilobium parviflorum* forma *aprica*. 5. E. Grimstead. — *E. parviflorum* × *roseum* (W.). 5. E. Grimstead. 9. Tisbury.—*Carduus acanthoides* L. (W.) 6. Petersfinger. 10. Harnham. — *Hieracium sciaphilum* Uechtr. (W.) 5. Grimstead; Redlynch. 7. Salisbury. 9. Baverstock, *Penruddocke;* Compton. 10. Harnham.—*Tragopogon porrifolium* L. (W.) 7. Established for many years on railway-bank at Salisbury, *Tucker & Miles.* — *Mentha officinalis* Hull (W.). 9. Anstey and Dinton, *Rogers.* — *M. hirsuta* forma *capitata* (W.). 10. Britford. — *M. rubra* Sm. 10. Britford. — *Polygonum minus* Huds. (W.) 7. Stratford. 8. S. Newton. — *Allium vineale* var. *bulbiferum* (W.). 5. W. Dean. — *Potamogeton interruptus* Kit. 8. River Wily at Wishford. — *Lastrea Filix-mas* var. *paleacea* (W.). 9. Swallowcliffe, *Rogers.* — *Chara fragilis* Desv. (W.) 5. Hamptworth. 7. Amesbury, *Groves.* Of aliens and casuals:—*Lepidium perfoliatum* (W.). 9. Dinton, *Mrs. Audland.*—*Trigonella Fœnum-græcum* L. (W.) 7. Turnip-field at Stratford, *R. R. Smith.*—*Spiræa salicifolia* L. (W.) 11. Sedgehill, *Mrs. Oldfield.* — *Polygonum tataricum.* 5. Farley, *Henderson.* 10. Britford.—EDWARD J. TATUM.

S. HANTS RECORDS. — *Rosa stylosa* Desv. Mottisfont. — *Crepis taraxacifolia* Thuill. Fordingbridge.—EDWARD J. TATUM.

EXCHANGE CLUB FOR MOSSES AND HEPATICÆ (p. 88).—The Rev. C. H. Waddell's suggestion will, I believe, be welcomed by bryologists, and would, if carried out, I have no doubt, serve a very useful purpose. There is one thing, however, which ought very carefully to be avoided, *viz.* the danger lest such a club tend towards the extermination of our rarer species. I need only quote the following sentence from the report of the committee appointed by the British Association to investigate the disappearance of our native plants, to show that the danger is not a fancied one:—"Most of the correspondents agree, however, that the injudicious action of botanists themselves, and of botanical exchange clubs, have been a potent factor in the changes which have taken place" (*Brit. Ass. Rep*, 1889, 435). I think it would be necessary so to frame the rules that the avoidance of such results should be carefully provided for, and not left to chance. If this is possible, and is carried into effect, I should be very glad to add my name to Mr. Waddell's supporters.—H. N. DIXON.

EPILOBIUM LANCEOLATUM IN YORKSHIRE.—In looking through the willow-herbs of the Boswell-Syme Herbarium at Upper Clapton, I have found two good specimens of this plant, labelled "*Epilobium roseum?* Thirsk, Yorkshire. Augt. 1865. W. W. Newbould." This (if native) is a great extension of its known occurrence in England, and the specimens do not look at all as if they had been cultivated, besides which such a careful worker as Mr. Newbould would scarcely have failed to note anything suspicious about the station.—EDWARD S. MARSHALL.

CHESHIRE PLANTS. — The following brambles, not previously recorded for this county, have been named by Mr. Moyle Rogers:—*Rubus nitidus* Wh. & N. Wybunbury Moss, in some plenty. — *R. plicatus* W. & N., var. *Bertramii* (G. Braun). Thicket, S.E. end of Wybunbury Moss; a very erect plant, with few prickles, leaflets quite flat, large white petals, and stamens far exceeding the styles. —*R. Lindleianus* × *pulcherrimus.* Near Bollington; a very pretty hybrid.—*Hieracium sciaphilum* Uechtr. Abundant about Bollington and Macclesfield. A beautiful red-brown *Melampyrum pratense* L., growing plentifully on Wybunbury Moss, answers well to the description of var. *ericetorum* D. Oliver. *Utricularia neglecta* Lehm. flowered there last summer; and I was fortunate enough to find *Scheuchzeria palustris* L., long supposed to be extinct in this station. —Edward S. Marshall.

Additions to the Flora of Lancashire. — The undermentioned plants were gathered (1) during a short visit to Mr. Cosmo Melvill at Prestwich, v.-c. 59, S. Lancs.; (2) during a three days' stay at Elswick, near Kirkham, v.-c. 60, W. Lancs.; (3) in a walk from Lytham to St. Anne's, v.-c. 60:—

59. *Rubus fissus* Lindley. In and near Mere Clough, Prestwich, plentifully.—*R. incurvatus* Bab. Near the Asylum, Prestwich.

60. *Fumaria Boræi* Jord. and *F. confusa* Jord. Growing close to one another as weeds in garden ground at Little Eccleston.—*Polygala oxyptera* Reich. Sandhills, west of Lytham. Probably seen by many previous visitors, but apparently not recorded hitherto. —*Potentilla reptans* × *silvestris*. In a hedgebank near Inskip, with the parents growing close by.—*Rubus erythrinus* Genev. Frequent in hedges about Little Eccleston and Copp Church, Elswick. Confirmed by Dr. Focke and Mr. Moyle Rogers. This considerably extends its ascertained British range northwards. — *R. nemoralis* P. J. Muell. var. *Silurum* A. Ley (*teste* Rogers). Between Eccleston and Inskip. — *R. Lindebergii* P. J. Muell (*teste* Focke). Between Inskip and Elswick. — *R. podophyllus* P. J. Muell. (*teste* Rogers). Near the last-named.—*R. corylifolius* × *Lindleianus* (probably, *teste* Rogers). Between Inskip and Eccleston.—*Hieracium vulgatum* Fr. var. *ravusculum* Dahlst. Sandhills near St. Anne's; very local.—*Gentiana baltica* Murb. Sandhills between St. Anne's and Lytham, in quantity. Doubtless recorded before as *G. campestris*. Strictly annual; most of the plants were only in bud on August 6th.—Edward S. Marshall.

Note on Pachyphyllum. — Mr. Hemsley, in *Bot. Biol. Amer.* iv. 89, says: "Mr. Ridley informs us there is an undescribed species of this genus in the British Museum from Panama, collected by S. Hayes." This specimen is not from Panama, but, as the ticket states, from Tunguragua, which is in Ecuador; nor was it collected by Sutton Hayes, whose name Mr. Ridley has added to the ticket: I do not, however, identify the writing. The plant was subsequently identified by Mr. Ridley with *P. Pastii*. The Pavon specimen, on the faith of which *P. distichum* is added to the Mexican flora, may be that plant, but Reichenbach has appended to it a note—"near *crystallinum*."—James Britten.

All those interested in the study of our native Algæ will regret to hear that Mr. T. H. Buffham, A.L.S., died, after a short illness, at Walthamstow, on the 9th of February. Mr. Buffham was an enthusiastic collector and a most accurate observer, and his many papers on the reproductive organs of the *Florideæ* are well known. We hope at a later date to publish a sketch of his life.

NOTICES OF BOOKS.

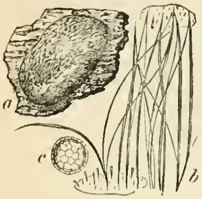
Guide to the British Mycetozoa exhibited in the Department of Botany, British Museum. By Arthur Lister, F.L.S. 8vo, pp. 42; 44 woodcuts. 3d.

Another of the bye-ways of natural science has recently been traversed, and important discoveries have rewarded the efforts of the patient investigators. For upwards of a decade Mr. Arthur Lister and members of his talented family have studied most assiduously the curious group of organisms known as Mycetozoa or Myxomycetes. Some of the results of their labours have recently been given to the scientific world. The *Monograph of the Mycetozoa* was reviewed in this Journal for 1895, and now we have this *Guide*, which is further illustrated by a set of drawings and specimens representing the forty genera known to occur in this country, now on exhibition in the botanical gallery of the British Museum. The illustrations are true to life, and show most charmingly both the natural colours and general habit of these creatures in their fruiting stage. They indicate not only artistic skill, but a practical knowledge of the intimate structure of the organisms. Possibly the drawing of a *Lamproderma* would most readily arrest the attention of the casual visitor; to the practical worker in this department of knowledge possibly the sketch of the plasmodium of *Badhamia utricularis* would appeal most strongly. It is so realistic that one almost expects to see it crawl off in search of food. Miss G. Lister deserves all the congratulations she may receive for this, her special work. By means of the printed guide, and a careful examination of the drawings with accompanying specimens, one may gain as much knowledge of the subject in an hour as could formerly be obtained by months of personal search.

In the preparation of the system of classification Mr. Lister has had a most arduous task. The nomenclature has been cumbered with numerous synonyms; specimens in herbaria have been wrongly named; in some published lists closely allied species have been strangely dissociated, and many superfluous specific names have been given. Mr. Lister has endeavoured to bring order out of comparative chaos, and to represent as concisely as possible what is now known of the natural sequence of the various genera and groups. In pursuit of this object he has examined the national collections at South Kensington and Kew, and the principal herbaria on the Continent; has criticized the naming of large numbers of specimens sent by correspondents in Britain, Europe, and America; and, above all, has spent much time in searching for these creatures in their natural haunts, both here and in other countries.

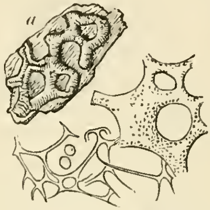
It is probably present to the mind of the author, more forcibly than to any of his possible critics, that no verbal descriptions—no linear arrangement—can fully cover all the diverse forms, nor suggest all the affinities of the varieties one meets with in the field. Even the Sub-cohort I., *Calcarineæ*, has its exception in the limeless form of *Physarum nutans* a. *violascens* (Mon. 51); and the order

Stemonitaceæ, with typically separate sporangia, has a singular exception in the curious *confluent* condition of *S. fusca* (Mon. 110). In the genus *Chondrioderma* the position of *C. Michelii* arrests one's attention. The examination of some thousands of *C. testaceum* in the field suggests that *C. reticulatum* and *C. niveum* are the natural offsets of the former. At least these three have an interesting habit of commensalism suggesting community of descent, whilst *C. Michelii* is conspicuous by its absence. One learns, however, from Mr. Lister that American observers have "sent fine specimens of flat winding plasmodiocarps corresponding with Rostafinski's type of *C. reticulatum*, which Mr. Wingate (of Philadelphia) has found in company with the stalked *C. Michelii.*" Here we might suggest that *C. testaceum* may be taken as a convenient centre from which the other forms diverge.



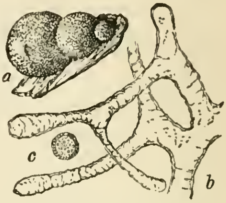
Dianema depressum
Lister.

a. Plasmodiocarp. × 2.
b. Capillitium attached above and below to the walls of the sporangium. × 50.
c. Spore. × 560.



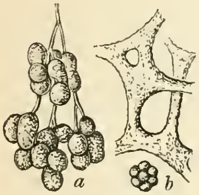
Cienkowskia reticulata
Rost.

a. Part of branching plasmodiocarp. × 4.
b. Capillitium threads and part of a perforated lime-plate. × 140.



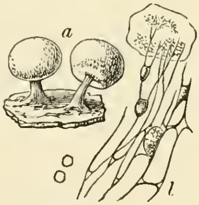
Lycogala miniatum
Pers.

a. Three æthalia. Nat. size.
b. Capillitium. × 150.
c. Spore. × 600.



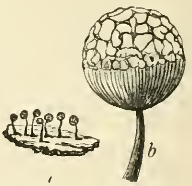
Badhamia utricularis
Berk.

a. Cluster of sporangia. × 3½.
b. Fragment of capillitium and spore-cluster. × 140.



Physarum nutans
Pers.

a. Two sporangia. × 9.
b. Capillitium threads, with lime-knots, attached to a fragment of the sporangium-wall. × 110.



Cribraria aurantiaca
Schrad.

a. Group of sporangia. × 2.
b. Sporangium after dispersion of the spores. × 20.

It is certainly agreeable to some of the workers in this field that many of the varieties named and described in the monograph have been omitted from the *Guide.* This course simplifies the subject considerably, without diminishing the practical value of the classification. Probably the most interesting portion to the ordinary student of natural science is that descriptive of the motile stages of these organisms, and to the general biologist the observations on the phenomena accompanying karyokinesis. But the exigencies of space prevent a fuller reference to these subjects, and the nominal price of the *Guide* places it within the reach of all. Suffice it to say that, taking the work as a whole, it stands as a monument of careful and original research, and marks an important stage in the advance of our knowledge of the Mycetozoa. The Trustees of the British Museum are to be thanked for having produced so desirable a book at so trifling a cost: specimens of the illustrations accompany this notice.

J. S.

Lessons in Elementary Botany for Secondary Schools. By Thomas H. Macbride. Boston: Allyn & Bacon. 1896. 8vo, pp. xi, 233. Price 60 cents.

This little book is essentially practical. "We have before us," says the author in his preface, "the spectacle of a great nation, absolutely ignorant of the principles of forestry. If the schools can so shape botanical instruction as to make it practical in the direction of a better appreciation of the value of a tree, they may in so doing advance not the cause of science only, but of humanity." This statement comes as an apology for beginning with the trees, a convenient arrangement as regards supply of specimens, since in most American high schools Botany is studied in the last half-year, beginning about Feb. 1st. The teacher who has conscientiously led his class through the fifty-four lessons laid down here will have the satisfaction of feeling that he has done a great deal towards training their observing powers, and inculcating a love of nature in the boys and girls placed under his care, and something towards checking the pitiful indifference to the value of their forests, to which the author has referred. It is cheering to read such directions as "Let the pupils go to the field and examine all accessible woody stems, to prepare a report, noting," &c. The first fifteen lessons are occupied with the vegetative organs, four with the flower, fruit, and seed, the rest with lessons on common plants, chiefly trees. There are a few lessons at the end on Ferns, Mosses, Hepatics, and Fungi, but the aim throughout is to provide for practical work which can be done entirely with the aid of the specimens, a sharp knife, and a good lens.

We notice a few instances of loose expression which might have been avoided. The terms endogens and exogens are unnecessary, and the bast is unfortunately described as inner bark (p. 11); while on p. 20 we are consistently told that the cambium makes bark outside and wood inside. If the teacher will note and correct these points, we can warmly recommend Mr. Macbride's *Lessons*, which in handy form and clear legible production leave nothing to be desired.

A. B. R.

The Phanerogamic Botany of the Matto Grosso Expedition, 1891–92. By Spencer Le M. Moore, B. Sc., F.L.S. Transactions of the Linnean Society of London (Botany), 2nd Ser. iv. pp. 265–516, tt. xxi–xxxix, maps. December, 1895.

This important contribution to our knowledge of Brazilian botany—of which a summary will be found in this Journal for 1893, p. 381—was read at the Linnean Society by the author on Nov. 2nd, 1893, and has thus taken more than two years to produce. Mr. Moore's absence from England, and his consequent inability to correct the proofs, have no doubt contributed to a delay in printing which, even with this qualification, appears excessive, although it may have been unavoidable.

Mr. Moore's interesting introduction extends over thirty pages, the remainder of the paper being occupied with the enumeration and description of the species collected, printed in the handsome, not to say extravagant, style in which the Linnean Society issues its Transactions. Eight new genera are figured and described—*Ephedranthus* and *Stormia* (Anonaceæ), *Desdemona* (Scrophulariaceæ), *Heterocroton* (Euphorbiaceæ), *Brosimopsis* (Artocarpeæ), *Zygella* (Irideæ), *Aphyllarum* (Aroideæ), and *Pogochloa* (Gramineæ): in most of these the minute structure has been carefully examined and figured. The descriptions of the species and the comparison of some of them with allied forms lead to the conclusion that Mr. Moore takes a somewhat narrower view of specific limitations than that which prevails nowadays, but he has bestowed much trouble and time upon his work, and his opinions are therefore entitled to respect. Botanists working in this country will at any rate be able to form their own judgment,* as the first set of the plants, with Mr. Moore's notes and names, is in the British Museum; the others being at Berlin, New York, Vienna, and Kew—here curiously called "the Thames-side institution"—respectively.

One or two points suggest criticism. It is difficult to see what is gained by the description, often at considerable length, of plants the genus and even the order of which cannot be determined. Pages 330, 331, for example, are mainly occupied with descriptions of three *Malpighiaceæ*, of which Mr. Moore says, "Specimina manc reverâ fructibus carentia, quâpropter quoad genus omnino dubia"; and a "planta incertæ sedis," of which even the order ("Simarubaceæ?") is doubtful. Nor do we perceive the advantage of describing a plant as "*Rudgea* sp. nov." If there is sufficient material to determine it as "sp. nov.," there is enough to entitle it to a name. It seems unnecessary to place "sp. nov." in brackets after the new species—the absence of any other reference implies this: but if it is done at all, it should be done uniformly—at present we are left in doubt as to whether "*Galactia Whitehornei* S. Moore" and "*Aneilema semifoliata* C. B. Clarke" are new or old species. The proofs might have been better read: "Glagiou" for

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* M. Chodat, himself no "lumper," has already referred *Polygala hygrophiloides* to *P. timoutoides* Chodat, with which Mr. Moore had indicated its affinity.

Glaziou and "Elliott" for Elliot occur on the same page. A more awkward slip, which, if the laws of priority be regarded, will saddle an inoffensive plant for all time with a singularly inappropriate name, is that by which a *Borreria*, which Mr. Moore, on account of its mean appearance, called *Lazarus*—a name he had previously bestowed also upon a *Justicia*)—is printed *B. Lagurus!*

The paper on the whole, however, is both useful and interesting, and its value is increased by Mr. Morgan's excellent plates.

J. B.

ARTICLES IN JOURNALS.

Bot. Centralblatt (No. 4).—O. Brefeld, 'Der Reis-brand und der *Setaria*-Brand.' — (Nos. 5-8). W. Froembling, 'Anatomisch-systematische Untersuchung von Blatt und Axe der Crotoneen und Euphyllantheen.' — (Nos. 6, 7). E. H. L. Krause, 'Ein archäologischer Beitrag zur norddeutschen Flora.'

Botanical Gazette (Jan. 16). — L. H. Bailey, 'Notes on *Carex*' (1 pl.). — D. H. Campbell, *Geothallus*, gen. nov. (*Hepaticeæ:* 1 pl.), —F. L. Scribner & J. G. Smith, 'Mr. Nash's American Grasses.' —L. H. Dewey, *Lactuca Scariola* in U.S. — J. M. Holzinger, *Fragaria Helleri* & *Rosa Macdougali*, spp. nn.

Botaniska Notiser (häft. 1).—P. H. Olsson, 'Svenska växtnamn i sydvästra Finland.' — K. F. Dusén, 'Om Ölands och sydöstra Smålands *Gentianæ*.'—B. Kaalaas, *Scapania gymnostomophila*, sp. n. —K. O. E. Stenström, 'Några Hieracia macrolepidea från sydvestra Sverige.'

Bot. Zeitung (Feb. 16). — C. Correns, 'Zur Physiologie von *Drosera rotundifolia*.' — G. Stenzel, 'Nachträgliche Bemerkungen zur *Tubicaulis*.'

Bull. Torrey Bot. Club (Jan. 30).—F. S. Collins, 'New England Marine Algæ.' — T. F. Allen, *Nitella subspicata*, sp. n. (1 pl.).— F. L. Harvey, 'Lichens of Maine.' — A. J. Grout, '*Myriophyllum*.' —A. W. Evans, '*Jungermannia Marchica*' (2 pl.). — A. Cogniaux, 'New Bolivian *Melastomaceæ*.' — J. K. Small, *Jepsonia* & *Saxifragopsis*, genn. novv. (*Saxifragaceæ*). — E. P. Bicknell, '*Carex vulpinoidea* and allies.'—E. L. Greene, 'California Saxifrages.'

Gardeners' Chronicle (Feb. 1). — 'Rhododendron × Numa' (fig. 20).—(Feb. 15, 22). R. A. Rolfe, 'Natural Hybrid Orchids.'

Journal de Botanique (Feb. 1). — —. Hue, 'Lichens d'Aix-les-Bains.'—G. Bertrand & A. Malèvre, 'Sur la diffusion de la pectase.' —C. Brunotte, 'Contribution à l'étude de la flore de la Lorraine.' —(Feb. 16). C. Sauvageau, *Strepsithalia*, gen. nov. (*Phæosporeæ*).— E. Bonnet, 'Géographie botanique de la Tunisie.'

Oesterr. Bot. Zeitschrift (Feb.). — V. Schiffner, '*Marchantia Berteroana* & *M. tabularis*.' — P. Ascherson, '*Equisetum heleocharis, maximum,* & *Athyrium alpestre*.'—A. Minks, 'Ueber die Protrophie.' —W. Schmidle, 'Zur alpinen Algenflora' (cont.).

BOOK-NOTES, NEWS, &c.

Mr. C. F. Millspaugh, of the Field Columbian Museum, Chicago, sends us his interesting *Contribution to the Flora of Yucatan*. He enumerates as the only known collectors in that region J. J. Linden in 1825, E. P. Johnson in 1848, Dr. G. F. Gaumier in 1885–6, and by himself in January, 1895. Dr. Gaumier collected 224 species, and we learn from Mr. Millspaugh that since the publication of his *Contribution*, he has sent in another collection of about 600 species. Mr. Hemsley is quoted as saying that "little is known of the details of the botany of Yucatan," and this is still the case; but it is unfortunate that that writer, in the Botany of the *Biologia Centrali-Americana*, should have ignored the plants (some 600 species) collected by Dr. A. Schott in Yucatan in 1865, and acquired for the British Museum in 1876. We called attention to these specimens in our notice of the first part of Mr. Hemsley's book (*Journ. Bot.* 1880, 90), and it is matter for regret that this and other collections then mentioned, equally easy of access, should have been ignored in the *Biologia*. Dr. Schott's plants are scattered through the Herbarium, and it would not be easy to give a complete list of them; they include several novelties, some of which have been described, and there is a MS. containing valuable notes on the names and folklore of the species. Mr. Millspaugh describes and figures one new species, *Euphorbia Armourii*, appropriately named in compliment to Mr. Allison V. Armour, of Chicago, at whose expense the 1891 expedition was undertaken.

The Director of Kew Gardens has added to his responsibilities the editing of the *Icones Plantarum*, for which Prof. Daniel Oliver has been responsible since 1891. Prof. Oliver's vast knowledge of systematic botany rendered him peculiarly suitable for a post of this kind; and botanists will regret that the *Icones* is no longer to have the great benefit of his supervision, more especially as this has been for some time past the only medium through which his work has been presented to the botanical world. Nineteen out of the twenty-five species figured in this part are, however, described by him, so it may be hoped that his co-operation has been secured; the other descriptions are by Dr. Stapf and Mr. Rolfe, the editor being so far unrepresented. Dr. Stapf describes two new genera of Grasses—*Woodrowia* (Agrostideæ) and *Halopyrum* (Festuceæ): the former is a new plant from Poona; the latter is based on *Uniola mucronata* L., the systematic position of which has always been doubtful.

The *Quarterly Review* for March has a curious article entitled "Plant Names," under which heading are lumped together various works ranging in date from 1870 to 1895, including Dr. Prior's *Popular Names of British Plants*, Messrs. Britten & Holland's *Dictionary of English Plant Names*, and—the *Index Kewensis!* With regard to the last, the misleading announcements put forward both inside and outside the book, on which we have commented more than once, have been so entirely successful, that while we are told that "we have largely to thank the Kew staff" for the work—

with which they had nothing to do—and Sir Joseph Hooker in particular for "the wonderful care" in assigning the native countries to the species—that being in reality the least satisfactory feature of the *Index*,—the actual compiler is not once named, nor is he even cited in the title, as is the case in all the other works mentioned. Mr. Jackson, whose indifference to the way in which credit has been carefully withheld from him furnishes an example of modesty as admirable as it is rare, no doubt finds consolation in the fact that he has done a valuable piece of work in a satisfactory manner, and that those who use his book know whom they have to thank for it; but it is none the less discreditable that the honour of an undertaking which no one but he would have carried through successfully should be persistently ascribed to every one but the man who is justly entitled to it. It is not surprising to find that the reviewer entirely misunderstands the scope of the *Index*.

It is becoming abundantly manifest that the omission of any prefatory matter to the *Index Kewensis* is causing, as we pointed out must be the case (*Journ. Bot.* 1895, 347), considerable inconvenience. The inaccurate prefatory statement by Sir Joseph Hooker that the work had been carried out at the Kew Herbarium, "with the aid of the staff of that establishment," coupled with the notice in the Kew *Bulletin* (1896, 29) that it is "in no sense intended to represent the views of Kew," naturally puzzles folk; and the writer of a letter in the *Pharmaceutical Journal* for Feb. 22nd reasonably enquires, "If the work is not to be considered an expression of the views of Kew . . . why is it stated that the work was done with the aid of the Herbarium staff?" The reply to the latter question is not obvious, for it is well known that Mr. Jackson's assistants in the compilation had no connection with the Kew establishment, but were engaged by him for that special purpose.

A SOMEWHAT lengthy notice of General Paris's *Index Bryologicus* (Paris: Klincksieck) was given in this Journal for 1895 (pp. 26–29) upon the appearance of Part i.; and the great want of such an Index among moss-students was pointed out. Part ii. (Dec. 1895, pp. 325–644) is now in the market, and will be found to pick up the thread of the subject in the genus *Dicnemon*, and to carry it on to about two-fifths of the way through *Hypnum*. This latter genus, though not half finished, occupies thirty-nine pages; yet only 132 out of 322 recognised species are here included. It is of course the immense synonymy of the older species and the numerous varieties of *H. cupressiforme* and of the *Harpidia* which account for the bulkiness of the genus. *Fissidens*, though boasting of 424 species, needs but thirty-two pages for their enumeration. In this genus nine species beginning with the letters "k" or "l" appear to have been omitted, suggesting the loss of a page of the author's MS. Other large genera, with their respective totals of species, are *Dicranum* (179), *Ectropothecium* (170), *Grimmia* (123), and *Hookeria* (234).—A. G.

LATE of arrival, but none the less welcome, are two parts of Mons. Venance Payot's *Florule du Mont-Blanc* (*Plantes Cryptogames*

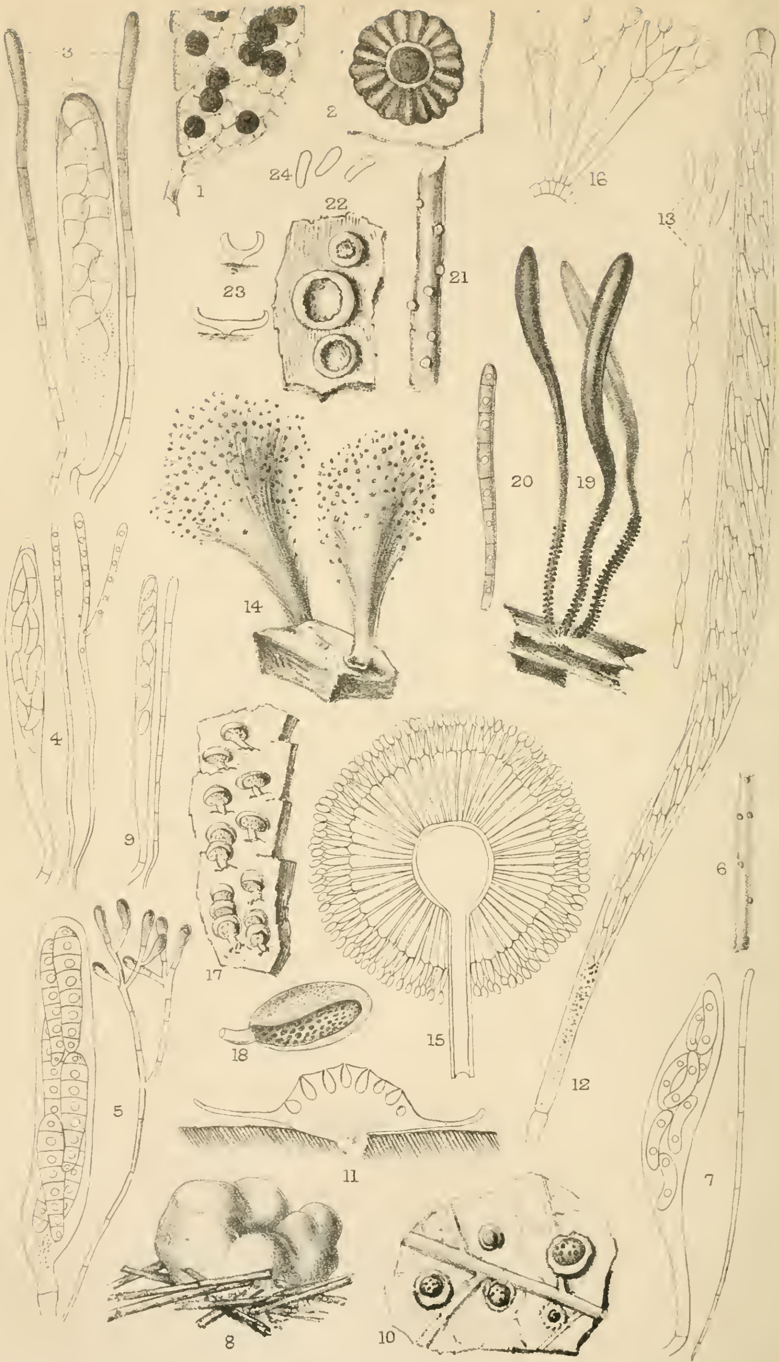
Vasculaires, 1881, pp. ii, 22; and *Muscinées*, 1886, pp. iv, 78. Geneva: H. Trembley), which is the outcome of some thirty years of botanical research in the Pennine Alps around Chamonix. During his long residence in what is probably the finest valley in the world, Mons. Payot has made full use of his unrivalled opportunities of studying the natural products of the district, and has published several pamphlets on its botany, zoology, geology, and petrology. As regards the two little books under notice, that on the Mosses is an enumeration of some 450 species, with their varieties, arranged in accordance with Schimper's *Synopsis;* and that on the Ferns contains 57 species, as well as the *Characeæ* (seven species). So many localities are indicated, that tourists bent on collecting in the neighbourhood of Chamonix will, by use of these books, be able to economise their time to the uttermost. It is to be regretted that the proof-sheets were not more rigorously corrected.—A. G.

Dr. Gunnar Andersson of late years has done such excellent work in tracing the flora found in Swedish peat-mosses, that we gladly welcome the little book—*Svenska Växtvärldens Historia i korthet Framställd* (8vo, pp. 106. Stockholm: Nordstedt)—in which he has brought together in a popular form many of the leading results arrived at by Prof. Nathorst and himself. In our country botanists so seldom get beyond speculation as to which plant is "native" and which "introduced," that it is refreshing to meet with a book in which the subject is dealt with in a more philosophical spirit. As the author is equally at home in the study of the recent and fossil plants found in Sweden, he is able to combine these two branches of botany, and produce an interesting account of the history of the Swedish flora, and of the influence on this flora of bygone climatic changes. Many of the illustrations, both of recent and fossil plants, are done by photo-mechanical process, and though not in all cases successful, some reproduce the characters, especially the venation and texture of the leaves, in a way that a draughtsman rarely approaches. Why is the venation of the leaf nearly always incorrectly drawn in our manuals?—C. R.

Mr. Hanbury has asked us to state that Part vii. of his Monograph on the British Hieracia, which was to have been published this month and quickly succeeded by another part, is again unavoidably delayed through the serious illness of the colourist. He hopes he may be able to issue it either in April or early May, and future parts at much more frequent intervals than has latterly been possible. We understand that whilst the publication has been in abeyance the drawing and engraving have steadily progressed.

Corrections.—The following corrections should be made in Mr. Praeger's paper on 'The Botanical Subdivision of Ireland':—P. 57, line 4 from bottom, for "Wexford," read "Waterford"; p. 66, line 5, for "1 to 10," read "1 to 40"; footnote, for "XXXIX. to I.," read "XXXIX. to L."; p. 62, line 12, for "Mahgunihy," read "Magunihy." In the second line of Mr. Bagnall's paper (p. 72), "1884" should be "1844."

Tab. 357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G. Massee del.
R. Morgan lith.

West, Newman imp.

New or critical Fungi.

NEW OR CRITICAL FUNGI.

By George Massee, F.L.S., F.R.M.S.

(Plate 357.)

Clypeum, nov. gen. (Pl. 357, figs. 1–3). Perithecia discoid, applanate, fixed to the substratum by a small point; central portion umbonate, sterile; peripheral part with numerous radial ridges, each ridge is structurally an elongated perithecium, dehiscing by a narrow, persistently closed slit running its entire length; asci cylindric-clavate, 8-spored; spores irregularly 2-seriate, hyaline, smooth, 1-septate, elliptical; paraphyses numerous, septate.

A very remarkable genus without close affinities; superficially somewhat resembling *Actidium*, but differing in the perithecium consisting of an applanate circular disc attached by a central point. The central portion of the upper surface is slightly umbonate and sterile; the remainder consisting of radiating ridges which sometimes fork near the margin. Each ridge corresponds in structure to the simple perithecium in such genera as *Hysterium*, hence the present may in a sense be considered a compound structure, as in *Eutypa* or *Hypoxylon*. The lips of the perithecia (forming the radial ridges), and the stroma connecting the same, consist of brown, stout, thick-walled, interwoven hyphæ. The present genus is certainly the most highly evolved of any included in the *Hysteriaceæ*. There are certain superficial points of resemblance with certain genera included in the *Microthyriaceæ*, but the present differs essentially from all in the perithecia dehiscing by a narrow, elongated slit, which does not open and expose the disc at maturity.

Clypeum peltatum Mass. (Pl. 357, figs. 1–3). Perithecia epiphyllous, orbicular, plane, gregarious or crowded and overlapping, black, somewhat membranaceous, fixed by a central point; perithecia forming ridges radiating from a central, sterile portion, 2–3 mm. diameter; asci cylindric-clavate, 8-spored, 100–110 × 14–15 μ; spores irregularly 2-seriate, hyaline, smooth, elliptic-clavate, 1-septate, upper cell slightly largest, 15 × 8–9 μ; paraphyses numerous, septate, sometimes branched, slightly thickened at the olive-brown tips, which are 4–5 μ thick.

Crowded and nearly covering the upper surface of some undetermined coriaceous leaf.

Napier; New Zealand (*Colenso*).

When seen under a lens, the perithecia closely resemble the pileus of *Coprinus plicatilis*.

Dasyscypha trabinelloides Mass. (Pl. 357, fig. 4). Gregarious or sometimes crowded, sessile, at first globose and closed, then expanding, becoming again contracted when dry, entirely orange-coloured, 0·5–1·5 mm. diameter; substance thin and soft; excipulum formed of radiately parallel, septate hyphæ about 4–5 μ thick; externally pubescent, the hairs often arranged in groups, septate, cylindrical, obtuse, minutely rough, overtopping the entire margin and giving it a fringed appearance when seen from the outside, 50–75 × 4–5 μ; asci narrowly clavate, apex slightly narrowed and tinged blue with iodine, 60–70 × 7–8 μ; spores 8, irregularly biseriate, hyaline, smooth, straight or very slightly curved, oblong-fusiform, 1-septate, not at all constricted at the septum, 10–15 × 3–4 μ; paraphyses filiform, sometimes branched, containing orange oil-globules.

Helotium trabinelloides Rehm. Ascom. no. 853.

Solenopezia trabinelloides Sacc. Syll. viii. no. 1982.

Helotiella Nuttallii E. & E. Proc. Acad. Nat. Sci. Philad., Part iii. 1894, p. 351.

Exsicc.—Rehm's Ascom. no. 853; Ellis & Everhart, N. Amer. Fung., Ser. ii. no. 3233.

On dry decorticated beech wood, Gomshall, Surrey. Found on the same matrix in Hungary, and on decaying wood of *Castanea* in the United States.

The American fungus described by Ellis & Everhart is identical with the species previously issued by Rehm in his Ascom. no. 853 as *Helotium trabinelloides. Peziza Dorcas* B. & Br., a Ceylon species, is almost indistinguishable under a lens from the present, but readily distinguished under the microscope by the excipulum being composed of fairly regularly-sized polygonal cells 9–12 μ in diameter.

Dasyscypha aurea Mass. Gregarious, sessile but narrowed to a short, stout, stem-like base, depresso-globose and closed at first, then expanded, but the margin more or less permanently erect, thin, 1½–2 mm. across; entirely clear sulphur-yellow, externally densely villose, hairs crowded, straight or very slightly flexuous, thin-walled, sparsely septate, cylindrical, apex obtuse or slightly pointed, minutely rough, pale yellow, 150–200 × 4–5 μ; hypothecium and excipulum minutely parenchymatous, cortical cells hexagonal or almost oblong, elongated in the direction from base to margin, 7–9 × 4–5 μ, pale yellow; asci rather broadly clavate, becoming gradually narrowed downwards from the very obtuse, rounded apex, 8-spored, not at all coloured with iodine; spores irregularly 2-seriate, hyaline, continuous, smooth, cylindrical, ends obtuse, often 2-guttulate, straight or slightly curved, 18–20 × 5 μ; paraphyses cylindrical, hyaline, about 2 μ thick, longer than the asci.

On rugged bark. Near Dimboola, Victoria, Australia (*F. Reader*).

Externally almost indistinguishable from *Erinella Nova-Zealandiæ.*

Dasyscypha Eupatorii Mass. Scattered, sessile, closed at first, then expanding until almost or quite plane, sometimes more or less contracted when dry, at other times remaining plane, 2–5 mm. diameter; substance soft and slightly fleshy; hypothecium and excipulum consisting of densely interwoven hyphæ, which become arranged in a parallel series to form the entire margin; externally clothed with cylindrical, 3–7-septate, obtuse hairs, which are sometimes rough with external, amorphous particles of lime, dark brown and translucent, except near the apex, which is paler, or almost hyaline, changing to a clear purple colour when treated with potassium hydrate, 70–120 × 5–7 μ, sometimes arranged in fascicles; asci clavate, apex narrowed and blue with iodine; pedicel elongated, often crooked, 100 × 8–9 μ; spores 8, irregularly 2-seriate, straight or slightly curved, hyaline, smooth, for a long time continuous, finally 1-septate, 12–20 × 3 μ (averaging 15 μ long); paraphyses hyaline, 2–3 μ thick, almost cylindrical.

Peziza Eupatorii Schw. Syn. Fung. 174 (1834).

Trichopeziza Eupatorii Sacc. Syll. no. 1758.

On dead stems of *Eupatorium purpureum*, Bethlehem, U.S.A. (*Schweinitz*).

The above diagnosis is drawn up from a specimen named by Schweinitz, and now in Herb. Berk., Kew. The clear purple colour assumed by the external hairs when treated with potassic hydrate is very striking. There is not a single point of specific relationship between the present species and *Peziza solenia* Peck. (= *Solenopezia solenia* Sacc. Syll. no. 1981), as has been suggested.

Barlæa subaurantiaca Mass. Ascophore subsessile, contracted into a very short, stem-like base; at first convex and closed, then expanding and becoming plane, the entire margin frequently drooping; disc umbilicate and usually furnished with a few radiating shallow furrows, tan-colour with a tinge of orange; externally whitish, very minutely scurfy, about 1 cm. across; excipulum formed of densely interwoven, septate hyphæ about 6–7 μ thick, cortex pseudo-parenchymatous, and running out into minute, irregular groups of cells that give the scurfy appearance to the outside; asci cylindrical, apex subtruncate, base narrowed into a long pedicel, 8-spored; spores obliquely 1-seriate, hyaline, 1-guttulate, rather coarsely warted, globose or subglobose, 14 μ diameter; paraphyses septate, the clavate tip 7–8 μ thick.

On the ground. Hamilton, Victoria.

Allied in size and habit to *Barlæa recurva* Berk., from Tasmania, but distinguished by the smaller spores and the orange-yellow disc.

Erinella Novæ-Zelandiæ Mass. Gregarious, narrowed below into a short stem like base, clavate and closed at first, then expanding and becoming pear-shaped, 2–3 mm. across; disc concave, pale yellow, externally tawny, densely clothed with septate, obtuse, cylindrical, brown, thin-walled hairs, 60–80 × 4–5 μ, usually rough with minute particles of lime; hairs forming the margin longer and pale, except at the tip; excipulum parenchymatous, cells 6–9 μ diameter; asci clavate; apex broad and very obtuse, tapering below into a slender, usually crooked pedicel, wall thick except at the apex, 8-spored; spores arranged in a parallel bundle, very long and narrowly clavate, apex 5 μ thick, rounded, and gradually tapering to the pointed base, multiseptate, hyaline, smooth, straight or slightly curved, 85–95 μ long; paraphyses septate, hyaline, not thickened at the tip, 2½–3 μ thick.

On dead wood and bark. New Zealand.

A very beautiful species, superficially resembling *Lachnella pulverulenta*, but rather larger, and with very different spores.

Allied to *Erinella lutea* Phil., a native of Victoria, but differing in the very broadly rounded apex of the ascus, and the narrowly clavate spores.

Scutularia gallica Mass. Ascophore sessile, applanate, fixed by a central point, somewhat fleshy and of a pale brown colour when moist, blackish and rigid when dry; disc circular, plane or very slightly convex, immarginate, when dry becoming somewhat concave and with a sharp edge, 2–3 mm. across; hypothecium and excipulum parenchymatous, hyaline; cortical cells polygonal, 12–15 μ diameter; asci elongated, narrowly cylindrical, apex rounded, narrowed below into a slender, often curved pedicel, 8-spored; spores hyaline, filiform, nearly as long as the ascus, 60–70 × 1·5 μ, rather flexuous, arranged in a parallel, slightly twisted bundle in the ascus, continuous, multiguttulate; paraphyses numerous, slender, about 2 μ thick, septate, hyaline, slightly clavate at the apex.

On rotten wood in damp places, St. Sauveur-le-Vicomte, Normandy.

Specimen in the Kew Herbarium, along with *Bulgariella pulla*, to which it bears a superficial resemblance, but differs widely in the hyaline, elongated, filiform spores.

Ombrophila aterrima Mass. Ascophores scattered or gregarious, slightly obconic, attached by a narrowed central point, subgelatinous when moist, rigid, horny, and patellate when dry, everywhere black; disc plane, distinctly marginate, sometimes very slightly umbilicate, glabrous, 3–4 mm. diameter; excipulum parenchymatous, cortical cells polygonal, 12–16 μ diameter; asci cylindrical, apex rounded, narrowed below into a slender pedicel, 8-spored; spores obliquely 1-seriate, hyaline, continuous, smooth, usually 2-guttulate, elliptical, ends rather obtuse, 10–12 × 7 μ; paraphyses numerous, slender, hyaline, expanding above into a brown pyriform head 6–8 μ diameter.

On rotten wood in damp places. Juan Fernandez (*Bertero*, 1706).

A very fine and distinct species, distinguished by the black ascophore, which superficially resembles *Bulgaria inquinans* in miniature.

Scleroderris virescens Mass. (Pl. 357, fig. 5). Scattered or in groups of 2–3 individuals, which are then more or less connate at the base, somewhat erumpent, globose and closed at first, then expanding, the irregular margin remaining more or less incurved, glabrous, entirely dingy, olive-green (when dry), about 1 mm. diameter; substance tough; hypothecium and excipulum composed of very slender, much interwoven, greenish hyphæ, which run out at the periphery into groups of larger cells, forming a grumous external layer; asci stout, subcylindrical, apex rounded, contracted at the base abruptly into a very short pedicel, not at all coloured blue by iodine, 85–95 × 18 μ; spores 8, irregularly 2-seriate, hyaline, smooth, straight or slightly curved, cylindric-ellipsoid, ends obtuse, basal end usually slightly narrowest, 5–7-

septate, 32–35 × 8–9 μ; paraphyses numerous, very slender, septate, corymbosely branched at the apex, the tips slightly thickened and tinged green.

On soft decayed wood. Bethlehem, United States (*Schweinitz*).

The present very fine and distinct species is amongst the Schweinitzian species in Herb. Berk., Kew, with the label "Bethlehem; herb. Schweinitz," but without a name by Schweinitz. On the other hand, the name "*Peziza virescens?*" in Berkeley's writing is on the paper on which the specimen is mounted.

Pyrenopeziza Ellisii Mass. (Pl. 357, figs. 6 & 7). Scattered or gregarious, erumpent, at first subglobose and closed, then expanded, thin and soft, blackish grey, glabrous, $\frac{1}{2}$–$\frac{3}{4}$ mm. diameter; externally consisting of irregularly polygonous cells 9–12 μ diameter, which have a tendency to become slightly elongated and parallel to form the minutely fimbriate margin, dark brown; within the outer dark-coloured marginal cells is a slightly longer series of hyaline hyphæ, which give to the margin a whitish appearance; asci clavate, apex narrowed and becoming blue with iodine, base narrowed into a long, slender pedicel, usually curved, 90–100 × 10–12 μ; spores 8, 2-seriate, hyaline, continuous, smooth, cylindrical, ends obtuse, usually very slightly curved and 2-guttulate, 14–16 × 3·5–4 μ; paraphyses scanty, cylindrical, septate, about 3 μ thick.

Peziza denigrata Kunze in Ellis, N. Amer. Fung, no. 565.

On dead culms of *Festuca tenella*. Newfield, New Jersey, U.S.A. (*Ellis*).

Superficially resembling *Niptera denigrata* J. Kunze, Fung. Sel. no. 180 (= *Pyrenopeziza denigrata* Rehm, Asc. no. 353); Krypt.-Flora, Disc. pl. 631, figs. 1–5, p. 605; Sacc. Syll. no. 1518.

P. denigrata differs from the present species in having the asci shorter, cylindric-oblong, abruptly narrowed below into a very short pedicel; paraphyses numerous, tips thickened, and the external cells of the excipulum smaller.

Spragueola Mass. (Pl. 357, figs. 8 & 9). Ascophore subglobose, irregularly nodulose, glabrous, sessile, solid, hymenium covering the entire surface; asci cylindric-clavate, apex slightly truncate, the pore becoming blue with iodine; spores 8, 1-seriate, continuous, hyaline, smooth, elliptical; paraphyses slender, septate; hypothecium formed of slender, hyaline, very densely interlaced hyphæ, which become thicker, much branched, aseptate, and more loosely interwoven at the centre of the ascophore.

Mitrula Berk. Grev. iii. 149.

As to what *Spathularia crispata* Fr. really is, we shall never know, as it has not been described. In first mentioning the name —Summ. Veg. Scand. 347 (1846)—Fries, in contrasting it with *S. flavida*, says, "A priori distinctissima!" Fuckel accepts as the species of Fries a *Spathularia* differing from *S. flavida* in having slightly different spores, measuring 48 × 3 μ, whereas his measurements for *S. flavida* are 72 × 2 μ (Symb. Myc. 332). Berkeley, on the other hand, considered the New England fungus communicated by Sprague to represent *S. crispata* of Fries, but, observing that the spores were elliptical, placed it in the genus *Mitrula*, without, however, giving a diagnosis, but simply stating, "Sporidia elliptic uniseriate." As the fungus under consideration is neither a *Spathularia* nor a *Mitrula*, neither does it accord with any hitherto defined genus; it is named after its discoverer, one of the pioneers of N. American botany.

Spragueola americana Mass. (Pl. 357, figs. 8 & 9). Ascophore subglobose, 1–1·5 cm. broad and high, upper surface coarsely nodulose or lobed, glabrous, everywhere pale ochraceous-tan (when dry), fleshy and solid, internally white; asci narrowly cylindric-clavate, apex slightly truncate, the pore becoming blue with iodine, straight, 70–75 × 5–6 μ; spores 8, obliquely 1-seriate, continuous, hyaline, smooth, elliptical, ends obtuse, 6·5–7 × 3·5 μ; paraphyses septate, slender, clavate, about 3 μ thick at the apex; excipulum formed of branched hyphæ about 2·5 μ thick and very densely interwoven; these become thicker, up to 5 μ, much branched, aseptate, and more loosely interwoven to form the central portion of the ascophore.

Mitrula crispata Fr.; Berkeley in Notices of N. Amer. Fung. no. 704*, in Grev. iii. 142 (1875).

On the ground, amongst pine-leaves. New England (*Sprague*, no. 5758).

Geoglossum lignicolum Mass. (Pl. 357, figs. 19 & 20). Gregarious, growing on decayed wood, 4–5 cm. high, entirely black with a purple tinge; upper half clavate, round or compressed, glabrous and covered by the hymenium, about 3 mm. thick; lower half forming the stem sterile, minutely velvety, equal, usually crooked, slender; asci clavate, apex rounded and tinged deep blue with iodine, often curved, 150 × 15 μ; spores linear-clavate, apex thickest, brown, translucent, usually very slightly curved, 7-septate, arranged in a parallel fascicle in the ascus, 8 in number; paraphyses straight, clavate, septate, apex tinged olive and about 6 μ thick.

Growing on rotten wood along with the type specimen of *Mitrula vinosa* Berk., which it much resembles superficially. Tasmania (*Archer*).

Distinguished by the violet-black colour, and in growing on wood. *Geoglossum australe* has much longer spores.

Hypocrella ochracea Mass. (Pl. 357, figs. 10–13). Hypophyllous or very rarely epiphyllous, gregarious or scattered; stroma at first subglobose and often slightly constricted at the base, hemispherico-depressed and surrounded by a thin border at maturity, 3–5 mm. diameter, pale ochraceous or sometimes almost white, firm, glabrous, internally white and composed of slender, densely interwoven hyphæ, fixed by a slender central point; perithecia rather scanty, immersed, broadly ovate, ostiola indicated externally by a minute pore; asci cylindric-fusiform, apex slightly capitate, narrowed below into a long pedicel, usually curved, not coloured blue with iodine, 250–300 × 13–15 μ; spores arranged in a parallel fascicle which is slightly twisted on its axis, hyaline, linear, ends pointed, multiseptate, constricted at the septa, about 200 × 3·5 μ, breaking up into elliptical cells about 10 × 3·5 μ while still in the ascus; paraphyses absent.

On dead and fallen coriaceous leaves. Brazil, *Glaziou*, nos. 18806, 18811, 18812).

Differs from *Hypocrella oxyspora* in being larger, and in having the component cells of the spores elliptical, and not apiculately fusiform.

Hypocrella oxyspora Mass. Hypophyllous, scattered, stroma cylindric-globose, surrounded at the base by a radiating, more or less floccose extension, 2–3 mm. diameter, apex often slightly depressed, apricot-coloured or bright ochraceous, glabrous, fixed by a central point and readily falling away at maturity; perithecia few in number, broadly ovate, large, ostiola indicated externally by small depressions; asci cylindric-fusiform, apex slightly capitate, not coloured blue with iodine, 200–220 × 12 μ; spores 8 in number, filiform, arranged in a parallel fascicle slightly twisted on its axis, hyaline, multiseptate, much constricted at the septa, averaging 150 × 4–5 μ, breaking up into its component cells before leaving the ascus; the cells vary from being very acutely fusiform to an almost globose median part abruptly running out at opposite sides into a hair-like apiculus, 18–20 × 4–5 μ; paraphyses absent.

Aschersonia oxyspora Berk. Decad. Fung. no. 463, in Kew Journ. Bot. vi. 205 (1854); Sacc. Syll. iii. no. 3221.

On the under side of green leaves of some *Myrsinea.* Lower part of India (*Hooker & Thomson*).

The fungus recorded for Brazil by Berkeley under the name of *Aschersonia oxyspora* in Journ. Linn. Soc. xv. 394, and in Dec. Fung. no. 615* (Kew Journ. Bot. viii. (1856)), is *Hypocrella ochracea.*

Superficially resembling *Hypocrella discoidea* (B. & Br.) Sacc., from Ceylon, but quite distinct from this and every other species in the peculiar shape of the cells into which the spores become broken up. The early breaking up of the spores into their component cells, and the subsequent disappearance of the asci, leaving the broken-up spores free in the perithecia, led Berkeley into the mistake of placing the present species in the genus *Aschersonia.* In fact, I am almost certain that I have seen conidia on the surface of young stromata resembling the cells of the broken-up ascospores in form in the present species. On the other hand, an examination of a portion of Montagne's type of *Aschersonia taitensis* Mont., the species on which the genus *Aschersonia* was founded, certainly has the young stromata covered with a dense stratum of fusiform spores; the primordia of perithecia were also very evident in the substance of the stroma, hence in all probability the genus *Aschersonia* will prove to be nothing more than the conidial form of *Hypocrella:* but in the event of this being proved, the name *Aschersonia* should be adopted for the genus, as having priority over *Hypocrella.*

Berkeley's type of *Aschersonia oxyspora* examined. It will be observed that the microscopic measurements given under the present species, and in many other instances, do not agree with those given by Berkeley for the same species. These discrepancies may be reconciled when we remember that the methods employed in making microscopic measurements were not so accurate thirty or forty years ago as at the present day.

HYPOCREA (HYPOCRELLA) AXILLARIS Cooke, Grev. xx. 4; Australian Fungi, 279.

On grasses. Queensland.

This species is identical with *Hypocrella Bambusæ* (B. & Br.) Sacc. Michel. i. 323; Syll. Fung. xi. no. 5064; hence the first-mentioned name should be given as a synonym of the second. *H. Bambusæ* was previously recorded only from Ceylon.

Dothidea Alyxiæ Mass. Perithecia (8–12) cæspitose and confluent, forming a black, convex pustule which originates beneath the epidermis, black, shining, glabrous, 2–3 mm. across, mouths of the perithecia rather large and partly open; asci subcylindrical, apex rounded, base narrowed into a short stout pedicel, 8-spored, 100 × 11–12 μ; spores obliquely 1-seriate, elliptical ends very obtuse, 1-septate, cells equal in size, brown, translucent, 18 × 10 μ; paraphyses absent.

On living leaves of *Alyxia buxifolia* R. Brown. Tasmania.

Readily distinguished by the narrowly cylindrical asci, the spores being 1-seriate in the ascus, and in having the two cells of equal size.

Microthyrium Psychotriæ Mass. Perithecia scattered, hypophyllous, orbicular, discoid, almost plane, smooth, blackish brown, opaque, 100–125 μ diameter, mouth distinct and slightly prominent; asci clavate, shortly stipitate, 45–50 × 6–7 μ, 8-spored; spores irregularly 2-seriate, hyaline, smooth, narrowly clavate, 1-septate below the middle, 7–8 × 2·5 × 3 μ.

On the under surface of living leaves of *Psychotria subpunctata* Hiern. West Tropical Africa, lat. 1° N. (Coll. *G. Mann*, no. 1814).

The minute perithecia are uniformly scattered over the under surface of the leaf, and were supposed by Hiern to be black points in the tissue peculiar to the species, hence his specific name.

Sterigmatocystis vitellina Ridley (Pl. 357, figs. 14–16). Entire fungus 2–3 cm. high, composed of numerous erect, aseptate hyphæ 10–12 μ thick, which are arranged in a compact, parallel fascicle for some distance upwards from the base, becoming free from each other and spreading to form a lax tassel at the apex, each hypha being terminated by a globose or broadly pyriform head 80–100 μ diameter; apical swelling of the hypha 18–22 μ diameter, giving origin to densely packed, radiating, narrowly clavate basidia 15–18 μ long, and about 4 μ thick at the apex, which bears 3–5 conical sterigmata 6–8 μ long; each sterigma in turn bears a single subglobose conidium at its apex about 4 μ diameter. Colour of every part of the fungus bright egg-yellow.

Gregarious on the fallen pericarps of some undetermined fruit. Singapore, *H. N. Ridley*.

The present species is in absolute agreement with the generic character of *Sterigmatocystis*, except in having the hyphæ grouped into a compact fascicle to form a stem-like base, a character which I do not consider as of generic importance, although Saccardo has done so in the parallel case of *Penicillium* and *Coremium*.

Sporotrichum arabicum Mass. Developed in the unexpanded inflorescence; olive-brown, velvety, soon pulverulent, bordered by the pale, radiating mycelium; sterile hyphæ creeping, branched, sparingly septate, hyaline, 4–5 μ thick; fertile hyphæ ascending, septate, furnished near the apex with subfasciculate, short, closely septate branchlets; conidia solitary and apical, fusoid, base truncate, apex apiculate, smooth, pale olive, 6 × 3 μ.

Arabia (coll. *J. Lunt*). Parasitic on the young inflorescence of *Phœnix dactylifera*.

Completely covering the inflorescence with a dense blackish olive powder long before it escapes from the spathe. The flowers are completely destroyed.

Pluteus giganteus Mass. Solitary or gregarious; pileus broadly ovate, then expanded, broadly gibbous, even, glabrous, dry, becoming much contracted when dry, margin more or less persistently incurved, tawny-orange, disc darkest, 18–24 cm. across, flesh firm, 2 cm. or more in thickness at the disc, becoming gradually thinner towards the margin; gills free, 6–8 mm. distant from the stem, rather crowded, thin, slightly wavy, margin entire, pale salmon-colour, up to 2 cm. broad; spores elliptical, smooth, 1-guttulate, pale salmon-colour, 7 × 5 μ; stem 12–14 cm. long, 3–4 cm. thick at the apex, base much incrassated, incurved, solid, glabrous, pallid.

Growing on rotten wood. Georgetown, British Guiana (*Jenman*, no. 3596).

A very fine species, characterised by its large size, and much incrassated base of the stout stem. Jenman stated that one specimen weighed two pounds when fresh.

Polyporus diminutus Mass. (Pl. 357, figs. 17 & 18). Horizontal, imbricated, conchate, soft and fleshy, pileus convex, margin slightly incurved, glabrous, deep orange-red, 3–4 mm. across, flesh pale yellow, hymenium almost plane, similar in colour or paler than the pileus, pores shallow, oblong, with a tendency to radiate from stem to margin, about ¾ mm. long, dissepiments thick; cystidia absent; spores hyaline, smooth, elliptic-oblong, 3–4 × 1·5 μ; stem lateral, horizontal, slightly curved, slender, about 2 mm. long, yellow, rarely with a tinge of red, pruinose.

On stumps of trees. Port Phillip, Victoria (*F. Reader*, no. 31).

Distinguished from *Gloeoporus pusillus* in the yellow, pruinose stem, and in being rigid and dry, not at all tremelloid.

Clavaria Kewensis Mass. Base thick, dividing almost at once into numerous, subequal, divergent branches 4–7 cm. long; branches uniform in thickness throughout, often compressed, imperfectly hollow, dividing near the apex into 2–4 short branchlets, axils rounded, tips obtuse or divided into 2–4 short finger-like processes; base and main branches rusty-brown, becoming ochraceous upwards, pruinose with the elliptical, colourless spores, which measure 5–6 × 3·5–4 μ. Fragrant.

On rotten wood. Rock garden, Kew Gardens, Oct. 1895.

Forming dense tufts 5–6 in. across. A very distinct species, characterised by the rusty colour, and fragrant, spicy smell, which resembles that of *Lentinus cochleatus*.

Mollisia chionea Mass. & Crossl. (Pl. 357, figs. 21–24). Gregarious or crowded, sessile, but attached by a somewhat narrowed base; thin and fragile, snow-white, almost translucent when moist, becoming dead-white when dry; subglobose and closed when young, gradually becoming plane, and finally slightly convex; margin minutely fimbriate externally, very delicately pruinose, about 1 mm. across; cortex composed of hexagonal cells which are slightly elongated in the direction from base to margin, 20–25 × 10–12 μ, running out into crowded, parallel hyphæ of different lengths to form the irregularly fimbriate margin; asci cylindric-clavate, apex narrowed, base rather stout, 40–45 × 5–6 μ, 8-spored; spores irregularly 2-seriate, hyaline, continuous, smooth, narrowly cylindric-oblong, ends obtuse, straight or very slightly curved, 6–8 × 1·5–2 μ; paraphyses cylindrical, about 2 μ thick, scarce.

On dead or dying stems of *Carex pendula*. Elland, West Yorks. Comm. *C. Crossland*. Coll. *W. Needham*. Oct. 1894.

Bearing some superficial resemblance to *Helotium eburneum*, which sometimes occurs on the same host, but distinguished by its larger size, absence of stem, much larger cortical cells, and somewhat larger spores. Substance soft and watery when growing.

Description of Figures on Plate 357. — Fig. 1. *Clypeum peltatum*, group of plants on portion of a leaf; nat. size. 2. Single plant of same; × 7. 3. Paraphyses and ascus, with spores of same; 400. 4. *Dasyscypha trabinelloides*, paraphyses and ascus with spores; × 400. 5. *Scleroderris virescens*, paraphysis and ascus with spores; × 400. 6. *Pseudopeziza Ellisii*, plants on culm of *Festuca tenella;* nat. size. 7. Paraphysis with ascus and spores of same; × 400. 8. *Spragueola americana*, plant; nat. size. 10. *Hypocrella ochracea*, plants on portion of a leaf; nat. size. 11. Section through a fungus of same; × 10. 12. Ascus containing spores of same; the spores have become broken up into their component cells; × 400. 13. Portion of a spore intact, also isolated cells of same; × 400. 14. *Sterigmatocystis vitellina*, two plants; nat. size. 15. Section of fertile head of same; × 350. 16. Portion of head showing origin of spores; × 600. 17. *Polyporus diminutus*, plants; nat. size. 18. Plant of same; × 10. 19. *Geoglossum lignicolum*, plants; nat. size. 20. Spore of same; × 400. 21. *Mollisia chionea* Mass. & Crossl., plants on portion of culm of *Carex pendula;* nat. size. 22. Same, slightly magnified. 23. Sections of same in various stages of development. 24. Spores of same × 400.

HEREFORDSHIRE RUBI.

By the Rev. Augustin Ley.*

In this Journal for 1894 (pp. 207–212) were recorded some plants which had been observed in Herefordshire since the publication of the *Flora of Herefordshire* in 1889. From these the Rubi were excluded; the abundant fresh material which had accrued and still was accruing, the new light which was being thrown on old forms, and the changes in arrangement and nomenclature in progress in this genus, rendering it imperative to postpone any attempt to deal with it.

The present paper proposes to supply this omission. Students of the genus will be prepared to find some obscurities and uncertainties still remaining; but enough appears now to be known, and that with sufficient accuracy, to justify its publication; to which the new edition of the *London Catalogue*, together with the "Notes" of Rev. W. Moyle Rogers upon it (*Journ. Bot.* 1895, 45, 77, 109), furnish an additional incentive.

In 1894 Dr. Focke, the well-known authority upon this genus, visited England, and spent a few days in Herefordshire. His visit cleared up several obscurities, and brought to light more than one fresh species in the county. We wish to acknowledge the uniform readiness with which he placed his great knowledge at our service; and not less that of Rev. W. Moyle Rogers, without which this paper could never have been attempted.

In investigating this genus in Herefordshire, we have been compelled in one or two cases to adopt new names, and draw up new descriptions; but this has in no case been done without the plant in question having been studied for a series of years, nor without exhausting all the available means of ascertaining whether it had been previously named and described on the Continent. The same may be said of a Monmouthshire form, of which we have taken this opportunity of publishing a description.

Where no other reference is given, the present paper is the first record for a species.

Rubus idæus L. *Flora of Herefordshire*, 84, 517. Native in woods and thickets, and widely distributed in all districts of the county. A variety with fruit yellow-white when ripe occurs at Shobdon Marsh in the north of the county, and at Westhide in the east.

Var. b. obtusifolius Willd. Very rare, and noticed only at a single station. Hedge and garden border near a cottage, Sellack, near Ross; 1892 and subsequent years. First notice, *Journ. Bot.* 1895, 46. The locality is one which I pass daily; and I think it impossible that this hybrid could have escaped detection, had it existed there for any length of time previously to 1892.

R. suberectus And. *Flora*, 517. Abundant at a single station in a heathy wood, at Edwin Ralph, near Bromyard. Perhaps doubtful between this species and *R. fissus* Lindl., to which Rev. W. Moyle Rogers would refer it.

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* Published with the concurrence of the Rev. W. H. Purchas.

R. SULCATUS Vest. Exclude *R. sulcatus*, *Flora*, 518. At a single station in a boggy thicket near Staunton-on-Arrow, and only two or three bushes at present in existence. First found, 1891; first notice, *Journ. Bot.* 1892, 111.

R. PLICATUS W. & N. *Flora*, 84, 518. Heathy or boggy woods and thickets, very local. Great Doward and Howle Hill, in the south of the county; Colwall, in the east, *Lees, Malvern Botany.*

Var. BERTRAMII G. Braun. Focke, *Syn. Rub. Germ.* 117. As the type, and often growing with it; very local. Cockshot Wood and Howle Hill, in the south; Edwin Ralph, in the east. *R. Bertramii* forms a link between *R. plicatus* W. & N. and *R. nitidus* W. & N.; approaching the former in habit and in the shape and toothing of the leaflets, and the latter in having stalked basal leaflets and stamens longer than the styles. It will probably prove pretty widely distributed in Britain. First found, 1887.

R. AFFINIS W. & N. Very rare; at present only known at a single station, in the north of the county. Rough bank at Corton, near Presteign, June, 1895. First found, 1895.

R. IMBRICATUS Hort. *Flora*, 86. Rare and local; almost confined to the Wye Valley from Sellack parish downward. Sellack; Foy; Gannerew. The plant reaches its greatest abundance in the Wye Valley a few miles south of Monmouth, in which district it was discovered by the late Prof. Hort.

R. CARPINIFOLIUS W. & N. Local and rare, chiefly in boggy thickets. Howle Hill, and other stations in the south of the county; Lyonshall Park, in the north. Unknown in the east, central, and western parts.

R. INCURVATUS Bab. *Flora*, 518. Confined to a limited area in the north and north-west of the county, from Ludlow in the north, to Kington in the north-west; most frequent in the valley of the Lugg, near Aymestry.

R. LINDLEIANUS Lees. *Flora*, 85. Widely spread throughout the county; rather abundant in some districts, but apparently much less so in the eastern districts. Hybrids in which *R. Lindleianus* is strongly marked occasionally occur.

R. ERYTHRINUS Genev. *Flora*, 90, as *R. Salteri* Bab. Rather local and rare; absent from a large portion of the county, and nowhere so fine and typical as in neighbouring county of Monmouth. Unrecorded for the central, north, or western districts; at St. Weonards and two other stations in the south; most abundant and typical in the eastern districts near Malvern. Its distribution stands thus in striking contrast with that of its nearest ally, *R. Lindleianus*. First notice, *Journ. Bot.* 1890, 206.

R. RHAMNIFOLIUS W. & N. (sp. collect.). Var. CARDIOPHYLLUS Muell. & Lef. *Flora*, 85. Not very abundant, but distributed over nearly the whole area of the county. A form which is strikingly smaller in all its parts occurs at Belmont, near Hereford, and at two other stations in the county. Other varieties of this bramble occur in Herefordshire which merit attention, but which remain at present unidentified with any named continental forms.

R. NEMORALIS P. J. Muell. In woods; very rare? Only once picked, in the Mynde Woods, near the centre of the county. The specimens were seen by Rev. W. Moyle Rogers, and referred by him without hesitation to typical *R. nemoralis.* First notice, *Journ. Bot.* 1895, 48.

Var. b. GLABRATUS Bab. *Flora*, 95. Widely spread in Herefordshire, in woods or on rough banks, and locally abundant. Rigg's Wood, and several other woods in the south of the county; occurring also in the eastern and central districts.

Var. c. SILURUM A. Ley. Rough hilly woods and pastures; very local in Herefordshire. Almost confined to the neighbourhood of Presteign and Kington, in the north-west of the county, in parts of which it is rather abundant. Further west, among the hills of Radnor and Breconshire, it is one of the most abundant brambles.

R. PULCHERRIMUS Neum. *Flora*, 93 (as *R. macrophyllus* W. var. *umbrosus*). Scattered throughout the county, both in woods and on hilly banks, but by no means the abundant bramble in Herefordshire which it becomes in more hilly districts. Unknown in the eastern districts of the county. The *forma setosa* mentioned by the Rev. W. Moyle Rogers (*Journ. Bot.* 1895, 48) is found at Welsh Newton, in the south-west. This might well be accorded a place among the *Radulæ*, but is kept here in deference to Mr. Rogers's views.

R. LINDEBERGII P. J. Muell. Local and rare in Herefordshire, and only observed at a few stations in the hilly parts of the county. Hatfield in the east, and in the neighbourhood of Kington and Presteign in the north. First found in 1893; first notice, *Journ. Bot.* 1895, 49.

R. DUMNONIENSIS Bab. Rare in Herefordshire, and only twice seen. Howle Hill and Fownhope, both in the south of the county. First found, 1891; first record, *Bot. Exch. Club Rep.* 1891, 327.

R. MERCICUS Bagnall, var. b. BRACTEATUS Bagnall. Discovered in 1895 in hedges at Moseley, in the north of the county. Other stations will doubtless be added. Not recorded for any of the neighbouring counties.

R. VILLICAULIS (sp. collect.), var. b. SELMERI (Lindeb.). *Flora*, 518 (as *R. affinis* W. & N.). Surprisingly rare in Herefordshire, and only known at two widely separated stations. Orcop, in the south; Brampton Bryan, in the north.

R. RHOMBIFOLIUS Weihe. *Flora*, 90 (under *R. Salteri* Bab.); 96 (under *R. Borreri* Bell-Salt.). Rare; seen only in three widely separated stations, in the south, north, and west. First record, *Bot. Exch. Club Rep.* 1884, 104.

R. GRATUS Focke. Only seen at a single station, on Howle Hill, in the south. First found by Rev. W. M. Rogers in 1892, and subsequently by Dr. Focke. First record, *Journ. Bot.* 1895, 77. *R. gratus* occurs plentifully in West Gloucester, within three miles of this station.

R. ARGENTATUS P. J. Muell. *Flora*, 88 (under *R. leucostachys*

Schl. var. *vestitus*). Locally abundant in many parts of the county. Ross and Gorstley districts, in the south, extending into the central districts at Aconbury; Malvern and other districts in the east. Unknown at present in the north and west.

Var. b. ROBUSTUS (P. J. Muell.). Still more local than the type. Abundant in St. Weonard's parish, in the south; seen at two other stations, one in the south, one in the north of the county.

Var. c. CLIVICOLA, nov. var. *Flora*, 519 (as *R. montanus* Wirtg.). Stem arched, angled, with many scattered hairs, red in exposure. Prickles uniform, strong, slightly declining, *bright rosy red at base*, with yellow tip. Leaves quinate or 5-pedate; leaflets *small*, not imbricate, lowest very shortly stalked, peduncle and midrib armed with strong sharp prickles. Leaflets with close *white or ash-coloured felt underneath.* Terminal leaflets long-stalked, *roundish cuspidate-acuminate*, all the leaflets deeply doubly serrate, with *conspicuously waved* edges, green above, *ashy white beneath.* Flowering branch with many strong thorns, which are similar to those of the stem. Rachis hairy, glandular especially in the lower part, branched and slightly wavy below, the ultra-axillary part long, nearly cylindrical, with patent, 1–3-flowered, often 1-flowered branches. Fruit round, rather small, freely produced. Sepals ovate-acuminate, reflexed in flower and fruit, with ash-coloured felt. Flowers cup-shaped; petals white or faintly rose-coloured; stamens longer than, ultimately connivent on, the yellow-green styles. The ash-coloured felt of the leaves, the waved edges and prominent veins of the *small* leaflets; the subrotund, somewhat obtuse-angular shape of the terminal one; and the patent, 1- or 1–3-flowered upper branches of the panicle, are characteristic. The stem bears some, sometimes many, sessile glands; rachis and pedicels bear many; the latter bear also numerous hooked prickles. Clearly in its place as a variety of *R. argentatus* P. J. Muell., with which plant it was associated by Dr. Focke, who saw it growing, and by Rev. W. Moyle Rogers. Native in woods, thickets, and hedges, especially in hill districts. Distribution.—Monmouthshire: Near Trelleck; Honddu Valley, abundantly. West Gloucester: Flaxley and Longhope Valleys. Herefordshire: Occurring in all the divisions of the county, but especially abundant in the hilly districts to the west, under the Black Mountain. Breconshire: Very abundant in the mountain valleys and subalpine ground in the Brecon Beacon range. Glyn Tarell; ascending to 1300 ft. in Glyn Collwng, at Torpantau tunnel mouth. In the neighbourhood of Crickhowell. Montgomery: At the junction of the Tarenig and the Wye. Oxfordshire: Wormsley Wood, *Rev. W. Moyle Rogers*!

R. RUSTICANUS Merc. *Flora*, 87 (as *R. discolor* W. & N.). Very widely distributed in the county, and absent from no district. Hybrids of *R. rusticanus* are of rather frequent occurrence, and have been noticed with the following species in Herefordshire: *rhamnifolius*, *pyramidalis*, *leucostachys*, *echinatus*, *fuscus*, and *corylifolius*.

R. PUBESCENS W. (sp. collect.). *Flora*, 87 (*ex parte*). In woods and thickets, rare and local. Caplar and one other locality in the south; Coxwall Knoll in the north of the county.

Var. b. SUBINERMIS Rogers. *Flora*, 520 (as *R. macrophyllus* W.). In open woods, very local. Bishopswood and Hope Mansel parishes in the south, in abundance over a wooded area of about one square mile, and extending into West Gloucester, but unknown elsewhere. This is a remarkable and handsome plant, assuming in the above locality an almost suberect growth. First notice (of the variety), *Journ. Bot.* 1895, 78.

R. THYRSOIDEUS Wimm. (sp. collect.), Exclude *R. thyrsoideus* Wimm. *Flora*, 88. Included in the Herefordshire Flora on the faith of a single specimen (Cowleigh Park, Malvern, on the eastern border of the county, 1887), which has been, however, assigned to this species with confidence both by Dr. Focke and Rev. W. M. Rogers. First notice, *Journ. Bot.* 1895, 78.

R. SILVATICUS W. & N. *Flora*, 94 (under *R. macrophyllus* W.). Woods and thickets, rare. Gathered at one locality (Rigg's Wood, Sellack) in the south, and one (Hampton Court) in the centre of the county. Abundant in the Honddu Valley, Black Mountain; a locality strictly in Monmouthshire, but included in the Herefordshire Flora. First notice, *Journ. Bot.* 1895, 78.

R. MACROPHYLLUS (sp. collect.) var. a. MACROPHYLLUS W. & N. *Flora*, 93, 94 (*ex parte*). In woods and thickets, rare. Haugh Wood in the south, Presteign and Aymestry in the north, Pont Esgob in the west of the county, and probably at other stations; but I still speak with diffidence on this bramble.

Var. b. SCHLECHTENDALII (W.). *Flora*, 94 (*ex parte*). Abundant nearly throughout Herefordshire, and usually an easily recognised plant, not exhibiting much variation. It is found in hedges and open thickets, not often in woods.

Var. d. AMPLIFICATUS (Lees). *Flora*, 94. Very rare. Known at one station only in the south of the county, in St. Weonard's parish, where it was gathered as far back as 1880.

R. SALTERI Bab. *Flora*, 90 (*ex parte*), 519. In woods and open rough ground; very local. Abundant at Aconbury and its neighbourhood, on the borders of the south and central districts, but not known elsewhere in Herefordshire or the neighbouring counties.

R. SPRENGELII W. *Flora*, 96 (as *R. Sprengelii* W., var. *Borreri* Bell Salt.). Rare and local in Herefordshire; at one station near Kington in the north, and at two in the south of the county on the borders of the Forest of Dean. Increasing in frequency in West Gloucestershire, in the Forest of Dean itself.

R. orthoclados, n. sp. Stem bluntly angular, green, suberect; hairy, with few nearly sessile glands. Prickles uniform, slender, declining, almost subulate, mostly confined to the angles. Leaves 3-5nate-pedate; terminal leaflet short-stalked, ovate or elliptic, *gradually acuminate, with long point;* intermediate similar, basal subsessile, imbricate. Leaflets green on both sides, with scattered hairs above, and short stiff hair beneath; veins prominent beneath, impressed above; toothing shallow, irregular. Panicle irregularly pyramidal, with blunt top; rachis zigzag; prickles very few, acicular. Branches 3–5-flowered, ultra-axillary part short, with patent 1–3-flowered branches, and subsessile primordial flower. Peduncles, pedicels, and calyx with *rather numerous, slender, unequal, stalked glands*, far exceeding the grey felt and short hair. Petals white; stamens white; styles short, green. Sepals ovate-acuminate, spreading, *externally green*, with white margins; points rising round the fruit, which is globular and acid. Locality.—Woods on the Beacon Hill near Trelleck, Monmouthshire, abundantly.

This bramble was named by Dr. Focke, from dried specimens, *R. myricæ* Focke, var. *virescens* G. Braun, and was sent out as such in Set of British Rubi, 1892–1895 (No. 60); in 1894, however, on seeing the plant growing, Dr. Focke withdrew the name. Distinctive features are the curiously suberect habit and sepals recalling the Suberect group, in conjunction with a *glandular* panicle; and the gradually acuminate leaflets, green on both sides. The plant above described occupies a large area of woodland (some three square miles) on Beacon Hill, Monmouthshire. On the adjoining heath occurs what seems to be a form of the same bramble with leaves much more deeply cut and plicate, and with the glands of the panicle-rachis fewer and subsessile. A hybrid also occurs on the heath between the last-named plant and (probably) *R. Sprengelii* W.

R. MICANS Gren. & Godr. *Flora*, 91, 519 (as *R. adscitus* Genev.). Widely distributed, but not very common. In thickets and open ground, not in hedges. Sellack and other localities in the south; Lyonshall in the north of the county; unrecorded from the eastern and central districts.

R. HIRTIFOLIUS Muell. & Wirtg. *Flora*, 92 (under *R. adscitus* Genev.). In woods and thickets, rare and local. At a single station in the south (Hope Mansel), and a single station in the north of the county (Ludlow). Very abundant at its northern station over several miles of woodland and rough open ground, and extending into Shropshire. In the southern station the main colony of the plant is in West Gloucester, where it abounds in heathy plantations on Mitcheldean Meend. The Herefordshire plant was determined as *R. hirtifolius* Muell. & Wirtg. by Dr. Focke in 1892, but it was not until the totally different plant of the Plymouth neighbourhood was found not to be Mueller & Wirtgen's bramble that it was open for us to accept Dr. Focke's determination with regard to the Herefordshire bramble. First record, *Journ. Bot.* 1895, 80.

R. PYRAMIDALIS Kalt. *Flora*, 91 (as *R. villicaulis* W. & N.). Abundant throughout Herefordshire as a woodland plant. The Herefordshire plant is not *typical R. pyramidalis* Kalt., which hardly occurs in the county, but a variety with longer panicle, larger leaflets, and a freer growth than usual.

Var. EGLANDULOSA. The variety here in view is a handsome plant, strikingly different in aspect from ordinary Herefordshire *R. pyramidalis*, and equally so from the type, In abundance in Cowleigh Park, Malvern, in the east, and Shirl Wood, Eardisland, in the north of the county.

R. LEUCOSTACHYS Schleich. *Flora*, 88. Very abundant almost throughout Herefordshire, and varying extremely; the most remarkable varietal forms being (1) those in which the stem and rachis bear numerous acicles and stalked glands; (2) another in which the sepals ascend and clasp the fruit. It varies in Herefordshire with white or pink petals; but the form (*R. conspicuus* Auct.) bearing handsome deep red flowers is rare in the county.

Var. b. GYMNOSTACHYS (Genev.). Rough banks and woods, rare. Walford and Bishopswood in the south; first discovered by Rev. W. M. Rogers in 1891. Set of British Rubi, 1892–1895 (No. 14). First notice, *Journ. Bot.* 1895, 80.

Var. c. ANGUSTIFOLIUS Rogers. See *Flora*, 90. Woods and hedges; locally abundant on the Doward Hills in the south, occurring both in the centre and north of the county. This is a very well marked variety in Herefordshire. First notice, *Journ. Bot.* 1895, 80.

R. CURVIDENS A. Ley. See *Flora*, 90, 91 (under *R. Salteri* Bab.); 94, 95 (under *R. Schlechtendalii* W.). Woods and thickets, not in hedges, rather rare. Known in about eight localities in the south, centre, and west of the county. Sellack; Aconbury; Belmont; Dinmore.

R. MUCRONATUS Blox. *Flora*, 95 (*ex parte*). Widely distributed in woods and wood-borders, but rather scarce. Noticed in all except the western districts of the county. Carey and Caplar Woods in the south, Belmont in the centre, Whitney in the north. Two, if not three, strains of this bramble are found in Herefordshire:—(1) a plant with long-stalked single flowers in the panicle, approaching *R. glabratus* Bab.; (2) a plant with leaves nearly all ternate, approaching *R. pulcherrimus* Neum.; (3) a plant with thick, densely woolly leaves, approaching *R. leucostachys* Schleich. I have, however, the authority of Rev. W. M. Rogers for uniting all these plants under *R. mucronatus* Blox.

R. GELERTII Frider. var. CRINIGER Linton. In woods, rare. Two stations are known for this bramble: Little Doward in the south, Lingen in the north of the county, in both of which the name rests on the authority of Rev. W. M. Rogers. It will doubtless be found at other places. First found, 1892; first notice, *Journ. Bot.* 1895, 81.

R. ANGLOSAXONICUS Gelert. *Flora*, 94 (under *R. macrophyllus* W.). Thickets and open woods. The type seems to be a rare plant in Herefordshire, the only stations yet known being two or three in the south, near Ross.

Var. b. RADULOIDES Rogers. Rare; one station in the south (Chase Wood, near Ross), one in the east (Westhide Wood).

Var. c. SETULOSUS Rogers. *Flora*, 100 (as *R. Koehleri* W. var. *infestus*). Widely distributed and locally abundant, especially in the south and south-west of the county. Known at a single station in each of the central, north, and west divisions, this plant becomes a marked feature of the bramble vegetation in some of the hilly woods of the Ross district, whence it follows the Monmouthshire portion of the Wye Valley in great abundance as far as Tintern. It is a very marked plant, attracting attention by its bright red stems and exaggerated armature, and standing quite midway between *anglosaxonicus* and forms of *Koehleri*, or even *infestus* W.

R. INFESTUS W. On rough ground and in open woods. Only known at present in the north-west of the county, at Kingswood, near Kington. First found, 1895.

R. BORRERI Bell Salt. Exclude the *R. Sprengelii* W. var. *Borreri: Flora*, 96. Extremely local. Abundant on wooded hills lying near the centre of the county, for about three square miles between the Mynde Park and Orcop, but unknown elsewhere. First found, 1894.

Var. c. VIRGULTORUM A. Ley. See *Flora*, 93, under *R. umbrosus.* Local, and thinly scattered over the north-east and north of the county; apparently becoming more frequent in Shropshire, where a fine series of specimens, kindly sent to me by Mr. R. de G. Benson, shows that this bramble makes a near approach to *R. infestus* W. Kimbolton; Thornbury; Ludford Park; Brampton Bryan. First published, *Journ. Bot.* 1894, 143.

R. LEYANUS Rogers. *Flora*, 520 (as *R. Purchasii* Blox.). On rough banks and in woods; widely distributed and locally abundant in Herefordshire. From Howle Hill in the south to Edwin Wood in the east, and Lyonshall in the north-west, this well-marked bramble is known in about twelve distinct stations scattered through all the districts of the county.

(To be continued.)

THE DRACÆNAS OF THE MALAY PENINSULA.

By H. N. RIDLEY, M.A., F.L.S.

THE Dracænas are by no means an easy group of plants to study, on account of the absence of very distinctive characters in herbarium specimens on which so many species have been based. The leaves are apt to vary very much in different parts of the same plant, in form and size. The flowers are in almost all species very similar, and though the inflorescence varies from a raceme to a spreading panicle, yet the racemose species often have a tendency to throw out lateral branches, and the paniculate ones vary so much in the development of the panicle that it is often difficult to distinguish plants by this character. The fruit again gives but little aid, as its form and size differ according to whether one, two, or three seeds are developed. The form of the whole plant is really one of the best distinguishing characteristics, but from the great size of many species this is not to be gathered from herbarium specimens, which too often have no notes giving any clue as to whether a species is a big tree or a low shrub. In the following notes I give on the species I have met with, I design to collect together such observations as I think are supplementary to the descriptions of our species in the *Flora of British India.*

Native Names.—The native name for the arboreous Dracænas commonly in use is "Chemou," but "Andong," which is, strictly speaking, *Cordyline terminalis* Kunth, is often applied to the large shrubby species, such as *D. aurantiaca* Wall. The smaller species, such as *D. Porteri* Bak., are often called "Poko San Juan" (St. John's Plant), a name evidently derived from the Portuguese; but this name is also applied to *Dianella ensifolia* Red.

CORDYLINE TERMINALIS Kunth. Though this plant is inserted in the *Flora of British India* as if it were a native of the Malay Peninsula, it is not known anywhere except in gardens. It has not even established itself anywhere as an escape, as far as I have seen, nor does it often fruit here. It is commonly planted in graveyards and round villages, and must have been brought from further east many years ago. Some tribes of Dyaks in Borneo associate the red-leaved variety *ferrea* with slaughter, and no one who has not taken one or more heads is privileged to plant it in his garden.

The following is a list of the wild Dracænas known to me from the Malay Peninsula:—

A. Trees or tall shrubs with spreading panicles.

(*a*) With narrow leaves.
D. graminifolia Wall.
D. granulata Hook. fil.
D. brachystachys Hook. fil.

(*b*) With broad leaves.
D. Maingayi Hook. fil.
D. aurantiaca Wall.
D. longifolia Ridl.

B. Little branched low shrubs with slender stems and racemose inflorescence (often with one or two short branches at the base).

D. Porteri Bak.
D. terniflora Roxb.
D. congesta Ridl.
D. breviflora.
D. singapurensis.
D. siamica.

C. Tall slender shrubs with drooping branches and wide-spreading pendent panicles.

D. nutans Ridl.
D. gracilis Wall.

D. GRAMINIFOLIA Wall. Cat. 5149. A tall elegant tree about 20 ft. tall, with a smooth white stem 4 in. or more through, much branched above, and densely leafy. The leaves linear-acuminate, with their bases clasping the stem, 6 in. long by ¼ in. across, deep polished green. Panicle a foot long, rather lax, about 6 in. across; branches suberect, rather slender. Flowers somewhat distant, an inch long, on a pedicel ¼ in. long, split about half-way down, the tube dilated towards the base, whitish green, free part of perianth linear. Stamens as long as the lobes, with fairly stout filaments. Stigma clubbed.

Inhabits streams and wet spots in thick jungle; flowering rarely. Singapore, Bukit Timah (3587*a*), Bukit Mandai (3800); Perak, at the Dindings (*Curtis*).

D. GRANULATA Hook. fil. Fl. Brit. Ind. vi. 327, I have not met with. It was found in Perak by Dr. King's collectors.

D. BRACHYSTACHYS Hook. fil. *l. c.* 328. A tall but little-branched tree with habit of *D. aurantiaca* Wall., but with the leaves narrow, lorate, acuminate, coriaceous, strongly keeled, over 3 ft. in length and 2 in. across; the panicle large and spreading, with berries as large as those of *D. Maingayi* Bak.

Rather rare, in dense woods. Malacca, at Hulu Belangkan; Penang, on Moniot's Road (*Curtis*, no. 2302); Perak, on Hermitage Hill.

D. Maingayi Hook. fil. *l. c.* 329. A very fine large tree about 40 ft. in height, with strict branches forming a large dense crown. The stem is 2 or 3 ft. through, the wood hard and white. The leaves are deep green and shining, lanceolate or oblong-acuminate, about 1 ft. long and 3 in. across, but often much narrower in proportion; the petiole is 1 in. long, winged to the base. The panicles are borne on the ends of the branches; they are 2 ft. long, with a few stout spreading branches. The bracts are lanceolate-acuminate; the flowers rather distant on the branches, about five together in a tuft, with several short ovate-lanceolate bractlets at the base. The fruits are as large as cherries, globose, and polished orange.

It inhabits sandy woods, usually near the sea; and I have met with it in Singapore at Changi (4413), Sungei Morai, Joas, and Bukit Panjang (5919); in Johore at Batu Pahat; in Malacca at Bukit Bruang, and on Pulau Besar, where Griffith also collected it.

D. aurantiaca Wall. Cat. 5744. *D. Cantleyi* Bak. in Journ. Bot. 1881, 326. *D. marmorata* Bak. in Bot. Mag. t. 7078. A large shrub, sometimes almost a tree, with usually the habit of *Cordyline terminalis* Kth., erect, little or not branched. Stem about 12 ft. tall or much less, 1 in. or less through. Leaves on the end of the branches or main stem, coriaceous, lanceolate or oblong-cuspidate or ovate-acuminate, tapering to the base, with a winged petiole, from 1 to 3 ft. long, 4 or 5 in. across, polished green or purple, marbled with ring-shaped lighter patches. Panicle erect, large, terminal, stout, about 1½ ft. long, with spreading branches thickly covered with flowers. Bracts 1 in. long, ½ in. across, lanceolate-acuminate, acute, the floral bracts much smaller. Flowers usually purple outside, white within, more rarely green or greenish white, cylindrical, slender, 1 in. long, on short pedicels ⅜ in. long, arranged in tufts of three or four, with very small ovate bractlets. Stamens as long as the perianth-lobes, white; style a little longer, rather stout; stigma capitate. Fruit orange, as big as a cherry. Seed translucent, white.

It inhabits open places, borders of woods, especially in wet spots, and is common all over Singapore and Southern Johore; further north it is less plentiful, and almost disappears northwards. In Malacca it occurs at Nyalas and Panchur, and in Penang at Paya Terobong. (Nos. 5879, 5880, 4682, 1644, 1650.)

Though an unmistakable plant when alive, herbarium specimens seem to give much trouble on account of the variable form of the leaf. The stem branches when the top is lost, and old stumps often attain a considerable size. The leaves vary much even in the same plant. A form with long narrow pendent leaves is figured in the *Botanical Magazine* under the name of *D. marmorata* Bak. In other plants there is more of a distinction between blade and petiole, and sometimes both forms occur on the same plant; they vary, too, in colouring. In hot open swamps they are of a deep violet-purple, darker beneath, and marked with paler circles. In other places they are light green, with pale greenish rings. The flowers follow the colouring of the leaves, being purple or greenish white, according to position. The showy orange-coloured fruits (from which Wallich no doubt took his specific name) resemble those of *D. Maingayi* Hook. fil.

D. LONGIFOLIA Ridl. in Trans. Linn. Soc. iii. 388, was met with in Pahang. It has long lanceolate petioled leaves, and a short few-branched panicle of fairly long flowers.

The following six species form a compact group, characterized by their small size and simple or nearly simple racemes. *D. spicata* Roxb. Fl. Ind. ii. 157, is described as "arboreous," and there seems to be much confusion as to what it is. I have not met with any arboreous *Dracæna* with a racemose inflorescence here.

D. PORTERI Bak. in Journ. Bot. 1873, 262. A low little-branched shrub about 2 ft. tall, the stem as thick as a pencil, whitish brown, with rings where the leaves have fallen off. The leaves are narrow linear-acuminate or lanceolate, 1 ft. long and ½ in. across, deep green. I have never seen any spots on them, nor do I see any on Wallich's specimen 5148*a* at the British Museum, though this is said to be spotted in the *Flora of British India*, l. c. 328. The raceme, which often bears a few short lateral branches at the base, is usually shorter than the leaves. The flowers are white; the small globose fruits are orange.

It is common in dry woods in Singapore (1652), and I have also gathered it on Mount Ophir, in Malacca (3148), and Gunong Pulai, in Johore; and it also grows at the Waterfall in Penang. The natives call it "Jarom-Jarom Padang."

D. terniflora var.? *Curtisii* Hook. fil. Fl. Brit. Ind. *l. c.* 329, appears to me merely a fine form of this species.

D. TERNIFLORA Roxb. Fl. Ind. ii. 159, is a plant of very similar habit, but with broader elliptic leaves more distinctly petioled, and short racemes of somewhat broader and thicker flowers. The leaves are always dark green, and the flowers white. There are intermediate forms to be met with between this and the last, and it is not always at first sight easy to distinguish the two, but typical specimens look very different.

It is called "Poko San Juan Bukit," *lit.* Hill St. John's plant, and is common in the same habitats as *D. Porteri* Bak., occurring in Singapore; Johore, at Jambu Larang; in Pahang on the Tahan River, and at Penang Waterfall (*Curtis; Ridley*, nos. 4758, 2393, 1651, 1642.

D. CONGESTA Ridl. in Trans. Linn. Soc. *l. c.* 388. Has a very reduced stem, the leaves often rising straight from the ground. They are long-petioled and large for the size of the plant, of a dark green colour. The raceme, which is very much shorter than the leaves, is dense, and the flowers are long and purplish.

It inhabits limestone rocks in Selangor and Pahang.

D. breviflora, sp. n. A dwarf plant, almost stemless. Leaves dark green, lanceolate-acuminate; petiole deeply channelled, not winged, attaining a length of 8 in.; the lamina 1 ft. long and 3 in. across, dark green, lanceolate-acuminate. The raceme very short and dense, 2 in. long, on a peduncle of the same length. Bracts at the base numerous. Flowers numerous, densely crowded, greenish white, in threes. Bract very small, ovate. Pedicels ⅛ in. long. Perianth short, ¼ in. long, split for half its length, the tube campanulate, the laciniæ oblong, blunt, recurved. Stamens: filaments as long as the perianth-lobes, thick at the base, tapering upwards, and inserted in the mouth of the tube by a very short slender portion; anther-bases divergent. Ovary oblong, yellow. Style filiform. Stigma capitate.

Johore, Ulu Batu Pahat (*Lake & Kelsall*).

Described from a plant cultivated in the Botanic Gardens, Singapore.

This plant has the habit of a young *Susum*, the leaves being recurved, and forming a fairly large tuft. The long narrow petioles and lanceolate blades, the short thick raceme, and remarkably short flowers, distinguish it from all others I have seen here. At the base of the raceme one leaf is shortly petioled and never fully developed, but convolute round it, after the manner of a spathe. I have seen this also in specimens of *D. congesta* Ridl.

D. singapurensis, sp. n. Stem about 1 ft. tall, ¼ in. thick, woody. Leaves elliptic or lanceolate, acute or subacute; petiole deeply grooved, slightly winged, 2 in. long or less; lamina 7 in. long, 2½ in. wide, dull deep green. Raceme short, about 2 in. long Flowers white, crowded above, in threes. Bracts small, ovate-acute. Pedicels ⅛ in. long. Perianth ⅜ in. long, nearly cylindric; laciniæ lorate, blunt, longer than the tube. Stamens shorter; filaments filiform. Anthers small, conic. Style longer than stamens. Stigma capitate. Drupe small, globose, red.

Singapore, in dense woods, Bukit Timak, and Chan Chu Kang (no. 6235). Johore, base of Gunong Panti.

A very low-growing species with broad leaves rather longer and distinctly petioled, and a very short raceme. The flowers are larger than those of the preceding, but shorter than those of *D. terniflora* Roxb. The terminal developed leaf has usually a much shorter and broader petiole.

D. siamica, sp. n. A dwarf plant about 1 ft. tall, with a slender angled stem ⅛ in. through. Leaves oblong or elliptic, or lanceolate-acuminate, acute, about eleven on a plant, petiole about 1 in. long; blade 6 in. long by 2 in. across or smaller, light green, with circular paler blotches. Raceme 4 or 5 in. long, with rather crowded flowers, five or six in a fascicle. Bracts lanceolate-acuminate. Flowers ½ in. long, cylindric, on short slender pedicels less than ¼ in. in length, greenish white. Stamens very slender. Anthers small, oblong. Style much stouter than the stamens, with a capitate stigma.

Siam, at Punga (*Curtis*, 2945).

Before flowering this looks like a young plant of *D. aurantiaca* Wall., but it never attains the size of that species, and the inflorescence is quite different. It is a pretty cultural plant.

D. PACHYPHYLLA Kurz. For. Fl. ii. 546; Fl. Brit. Ind. *l. c.* 329, is a native of the Andaman Islands. It closely resembles *D. terniflora* Roxb. The Malay Peninsula plants referred to this species belong apparently to some of the above-described species.

D. GRACILIS Wall. Cat. 5150. A slender shrub 5 or 6 ft. tall or more, with drooping branches, and a panicled inflorescence. There are three forms of this, which I think can hardly be considered specifically distinct, as they seem to pass into each other :—

(*a*) A tall long-branched shrub, with broad oblong or lanceolate dull green leaves as much as 6 in. long by 3 in. across. Panicle long, lax, pendent, spreading, with very slender branches. Flowers rather distant, yellow or greenish white, narrow, 1 in. long on slender pedicel.

This is the form usually to be met with in the low country in damp woods and thickets. In sandy spots it becomes more stunted, but is otherwise similar. It is common in Singapore at Changi, Tanglin (4412), Chan Chu Kang, &c., and I have collected it in the Carimon Islands, south of Singapore. In Johore I have collected it at Janjong Kupang, and on Gunong Panti and Gunong Pulai (3718), and also found it on Kedah Peak, in the north of the peninsula. The last three localities are hill districts, and the plants have narrower leaves and approach the next form.

(*b*) A smaller form, about 4 ft. tall or less, with narrow lanceolate acuminate acute leaves 5 in. long and 1½ in. across, with a smaller panicle and smaller flowers.

It chiefly occurs in the hill districts, as at Mount Ophir (4000 ft. elevation) (3150), Penang Hill (1100 ft.) (*Curtis*, 1186), Kedah Peak (3000 ft.), Gunong Hijau, in the Perak Hills (5000 ft.); but I have also met with it in Singapore at Chan Chu Kang, and on the Kwala Lumpur limestone rocks in Selangor, both localities in the low country.

Finally the plant passes into form *c*—

(*c*) A scandent, much-branched shrub, with very narrow acuminate lanceolate leaves 4 in. long by ½–¾ in. broad. Panicles short, about 2 in. long, with few branches, often produced laterally on the old wood. The flowers are dark purple, and much smaller than those of the other forms. Bracts ovate, large in proportion to the flower.

I collected this on the upper part of Gunong Hijau, in the Perak Hills, at 5000 ft. elevation. It is so distinct in appearance in its curious scandent habit, very long narrow acuminate leaves, and short panicle of purple flowers, that, had I not met with intermediate forms, I should certainly have considered it specifically distinct.

D. NUTANS Ridl. in Trans. Linn. Soc. *l. c.* 406. Has the slender half-scandent habit of *D. gracilis* Wall., and a very lax widespreading pendent panicles of slender branches, but the leaves are narrow linear, something like those of *D. graminifolia* Wall.

To these I append the description of a very remarkable plant, of which I have not seen the fruit, and am doubtful as to whether it should not be placed in the genus *Cordyline*.

D.? yuccæfolia, sp. n. Stem shrubby, branched, stout. Leaves crowded at the end of the branches, ensiform, acuminate, stiff and coriaceous, 15 in. long and 1 in. wide, striate. Panicle large, spreading, with numerous slender pubescent branches. Bracts ¼ in. long, lanceolate, acuminate. Flowers very small, ⅛ in. long, scattered on the branches, almost sessile; pedicels very short, pubescent. Perianth-tube turbinate, glabrous; lobes oblong, obtuse, free almost to the base. Stamens a little shorter; filaments adnate to the base of the tube, flattened, dilate above, red. Anthers oblong, obtuse, dorsifixed. Pistil shorter; ovary oblong, triquetrous, truncate. Style cylindric. Stigma dilate, capitate.

Siam, at Ghirbee, on limestone rocks (*Curtis*, no. 2935).

The leaves resemble those of some *Yucca* rather than those of a *Dracæna*. The large spreading panicle with pubescent branches, the small turbinate white flowers and triquetrous ovary, and stamens adnate to the base of the flower, make it a very distinct plant.

BIBLIOGRAPHICAL NOTES.

X.—The Dating and Indexing of Periodicals.

The suggestions made on these matters (*Journ. Bot.* 1894, 180, 271) have been in so many cases acted upon that I venture to raise one or two more points connected with the subject. When I referred with approval (*l. c.* 181) to the *Bulletin of the Torrey Botanical Club* as giving the date at the head of each number, I said, "This appears not easy to carry out, but Dr. Britton has somehow overcome the difficulty." I am now doubtful as to how far this date is to be accepted as strictly accurate. The dates of issue for the last three numbers have been Nov. 30th, Dec. 30th, Jan. 30th. Each issue contains three sheets, and the date appears on the first of these. It seems to me that unless the possibility of accidental delay has in some way been entirely removed, it is not easy to guarantee that a number thus dated should have been printed, stitched, and wrapped by the exact day named. When the date is printed on the cover, as in the case of the *Botanical Gazette*, the possibilities of such accidents are reduced to a minimum, and now that these dates are reprinted in the index to the volumes of that periodical, I see no better plan than this.

The practical bearing of this point will very shortly become manifest. The Supplement to the *Index Kewensis* will include all plants published up to the end of 1895. Should the species published in the Torrey Club *Bulletin* dated Dec. 30th, 1895, be included—*i. e.* have we sufficient guarantee that this number was actually published on that date?

In relation to this, the case of the *Bulletin of Miscellaneous Information*, published in connection with Kew Gardens, may be noticed. Thanks to the Stationery Office, as previously pointed out (*l. c.* 180), the actual date of issue may usually* be ascertained by those who know where to look for it; but both wrapper and front page are usually falsely dated, and this date is the one which is most likely to be quoted. Here is a list of the numbers for 1895, showing the supposed and actual dates of issue:—

Date on wrapper and front page.	Date of issue.
January.	February.
February.	,,
March.	March.
April. May.	June.
June. July.	July.
August.	September.
September.	,,
October.	October.
November.	December.
December.	January, 1896.

In the case of the last number, not only are the new species it contains likely to be included in any list of novelties for 1895, but it actually forms part of the volume which bears this date on its title-page! Seeing the difficulties which continually arise in consequence of past irregularities in dating, it is a matter for regret that Kew should set so bad an example in matters of detail.

Supposing the species not to be included in an 1895 list, another danger arises. In the course of time, some one—perhaps some transatlantic nomenclaturist, should the craze for innovation and general disturbance then continue—will discover them in their 1895 volume, and, innocent of the reason for their omission from the list, will insist on their dating from the ostensible year of publication. All this confusion might be avoided if one of the most important botanical establishments of the world could succeed in keeping its publications up to date. Those who are responsible for the confusion seem to hold the view that we should do nothing in this direction for posterity, on the unassailable ground that posterity has done nothing for us.

Attention was called (*Journ. Bot.* 1895, 77) to the absence of any date to the parts of the *Boletim de Sociedade Broteriana.* The two parts for 1895 show no improvement; nowhere is any indication of date to be found, save "1895" on the cover of each. Part i. was received at the Natural History Museum 24th June, 1895; part ii. 18th Jan. 1896; but, as I have said, there is no record in the publication itself, Worse still, the title-page for the volume, bearing the date "1895" twice repeated, is issued with the first part; yet it is certain that the volume cannot be completed until some time in the present year.

The *Bulletin of Miscellaneous Information* now gives an excellent index of species; the *Annals of Botany*, however, remains incorrigible; probably no periodical of equal importance is so preposterously indexed (see *Journ. Bot.* 1894, 272)—it is simply impossible to discover what subjects have been treated unless one reads through the whole, or happens to know the author's name. It can hardly be that the illustrious editors think it improbable that any one will ever want to consult the *Annals*, but, unless they had entirely omitted any pretence at an index, they could not have made its contents more inaccessible. The *Bulletin of the Torrey Club* gives a "general index" and a "generic index"; in the former such useless catch-words as "on," "two," and "genus" are entered; in the latter every mention of a genus is sedulously recorded, but nowhere are the new species indexed. The authors' names appear under "Contributors" in the general index.

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* Not always: the number headed "June and July, 1895," and dated "6/95," was not issued until the latter month.

James Britten.

THOMAS HUGHES BUFFHAM.

Thomas Hughes Buffham was born on the 24th of December, 1840, at Long Sutton, in Lincolnshire, and was educated at a private school there. After leaving school he took a situation as clerk in an office at Earith, Hunts, and here he made the acquaintance of an elderly gentleman named Wheatley, from whom he acquired a taste for astronomy. Having purchased a telescope, Mr. Buffham now devoted much of his leisure to the study of the stars, making several interesting observations, which have been recorded in the *Astronomical Notices*, *English Mechanic*, and elsewhere.

About twenty-six years ago Mr. Buffham removed to London, and entered the office of Messrs. Warren & Co., of New Broad Street, where he soon rose to be chief clerk, and ultimately London agent of the firm. Finding that his health was impaired by the late hours and constant work demanded by the study of astronomy, he was reluctantly compelled to abandon the subject.

About this time he made the acquaintance of Mr. W. H. Gilburt, a gentleman much interested in microscopical work, who inspired Mr. Buffham with a love for the microscope equal to that he had formerly had for the telescope. In August, 1881, the two friends and their families were staying at Teignmouth, South Devon, and there they collected material of all sorts for examination with the microscope. Amongst the seaweeds gathered by Mr. Buffham on this occasion was a specimen of *Callithamnion tetricum* with antheridia. On searching the *Phycologia Britannica* for a description of these organs, Mr. Buffham was astonished to find that only very few of the antheridia of the *Florideæ* are mentioned by Harvey, and he at once determined, if possible, to supply this want in our standard work on British Seaweeds. Aided by the advice of Mr. E. M. Holmes and others, he set to work most industriously. For many years he spent most of his holidays in collecting and studying the marine algæ, and even learned Latin, French, and

German that he might be able to read algological works written only in these languages. How well he succeeded in his self-imposed task his papers, published in the Quekett Microscopical Club's *Proceedings*, in this Journal, and elsewhere, and the beautiful series of preparations of the reproductive organs of the *Florideæ* supplied by him to the British Museum, bear witness.

In 1891 Mr. Buffham was elected an Associate of the Linnean Society, and he was a constant attendant at its meetings. Never very robust, he was taken ill early in the present year, and died on the 9th of February at Walthamstow, where he had resided for many years.

Mr. Buffham was an industrious collector, and added *Phormidium corium*, *Ectocarpus dasycarpus*, *Gonimophyllum Buffhami*, *Rhodochorton pallens*, and *Bonnemaisonia hamifera* to the British flora. For many years I had the pleasure of his acquaintance, and I am indebted to him for many beautiful specimens. Ever ready to aid, either with advice or material for study, those working at the same subject as himself, he will be missed by many students of our native algæ, and by none more than myself. The great characteristic of his work was its thoroughness, every detail, however trifling, even down to the mechanical "finish" of his slides, very many of which have passed through my hands, was attended to with the greatest care, and no difficulty was consciously shirked. How much British algology has lost by his death will be best understood by a perusal of his published writings, a list of which is given below:—

1. "Notes on the *Florideæ* and some newly found antheridia" (*Journal of the Quekett Microscopical Club*, i. ser. 2, 337 *et seq.* May, 1884).
2. "Newly observed Phenomena in the conjugation of the Diatom *Rhabdonema arcuatum*" (*l. c.* ii. ser. 2, 131 *et seq.* June, 1885).
3. "On the Reproductive Organs, especially the Antheridia, of some of the *Florideæ*. I." (*l. c.* iii. ser. 2, 267 *et seq.* July, 1888).
4. "On the Reproductive Organs, especially the Antheridia, of some of the *Florideæ*. II." (*l. c.* iv. ser. 2, 246 *et seq.* Jan. 1891).
5. "The Plurilocular Zoosporangia of *Asperococcus bullosus* and *Myriotrichia clavæformis*" (*Journ. Bot.* Nov. 1891).
6. "*Chantransia trifila*—a new Marine Alga" (*Journ. Quekett Microsc. Club*, v. ser. 2, 24 *et seq.* July, 1892).
7. "Conjugation of a Diatom—*Orthoneis binotata* Grunow" (*l. c.* v. ser. 2, 27. July, 1892).
8. "Algological Notes" (*Grevillea.* March, 1893).
9. "On the Antheridia of some *Florideæ*" (*Journ. Quekett Microsc. Club*, v. ser. 2, 291–305. Oct. 1893).

E. A. BATTERS.

MONTGOMERYSHIRE NOTES.

By William Whitwell, F.L.S.

I have during 1895 received specimens of the following plants from my correspondent Miss E. Jones, of Montgomery, which have not hitherto been recorded for Montgomeryshire:—*Fumaria officinalis.* Weed in garden.—*Trifolium hybridum.* Churchstoke Road.—*Adoxa Moschatellina.* Kerry Road.—*Apium nodiflorum.* Near Stalloe.—*Cornus sanguinea.* Churchstoke Road.—*Galium verum.* Road past the Castle.—*Calystegia sepium* and *Scrophularia Balbisii.* Way up to the Castle.—†*Mimulus luteus.* Stalloe Cottages brook; apparently established.—*Urtica urens* and *Hordeum murinum.* Castle grounds.

Finding, on examination of *Top. Bot.*, ed. 2, so many usually common species "wanting" for this county, I was led to look through my own collections and note-books with special reference to these. During the years 1862–1869 I frequently botanized in North Montgomeryshire, and I can vouch for the existence at that period of the following plants:—*Scolopendrium vulgare.* Guilsfield; 1862.—*Lastrea Oreopteris.* The Garfawr, Guilsfield; 1862.—*Polystichum angulare.* The Rallt, near Welshpool; 1862. These three ferns were sent to me by Mr. A. F. Field, then of Guilsfield. *L. Oreopteris* was plentiful on hills near Llanfyllin. — *Polypodium Robertianum.* On the sides of a disused mine-shaft on the upper portion of Llanymynech Hill, not far from the well-known "Ogo" Cave; Aug. 2nd, 1864. A. F. Field had met with a manuscript note in a book in a library at Welshpool stating that this fern grew on Llanymynech Hill. We devoted a long afternoon to a search for it, seemingly fruitless, until I proposed as a last chance to examine the abandoned mine-shafts, and on the sides of one of these I soon found it in some plenty, just within reach of my arm. We met with it in the one shaft only. The fronds were small, smaller than ordinary *P. Dryopteris.* In 1865 I saw it still there, but a few years later it had disappeared, as well as a solitary plant which had for some time been known on a bridge near Oswestry: exterminated, I was told, by a Shropshire "florist."

The subsequent notes are of species all collected or observed by myself:—†*Saponaria officinalis.* River-side below bridge, Llansantffraid-yn-Mechain; 1864. Plentiful a little higher up the stream, in the mill-grounds, and no doubt originally from the garden there, but thoroughly established. — *Cheiranthus Cheiri.* Plentiful on Montgomery Castle ruins in 1868; the true yellow-petalled "wild" form. Miss Jones reports it still there. — *Malva rotundifolia.* Llansantffraid-yn-Mechain; about 1866. — *Erodium cicutarium.* Just below Rodney's Pillar, on the Breidden Hill; 1866. — *Trifolium arvense.* Railway-side, near Llansantffraid-yn-Mechain; 1867.—*Valeriana dioica.* Top of Allt-y-gader (1000 ft.), near Llanfyllin; 1866. — *Tragopogon pratensis* (var. not noted). Mount Pleasant, near Llanfyllin; 1866. — *Epipactis latifolia* (true *latifolia* I am certain). Llandrinio; 1865.

Meconopsis cambrica Vig. South side of Pistill Rhaidr; 1864. The south side is in Denbigh. This is named in *Top. Bot.* for v.-c. 47 on the authority of "Melvill cat." I mention it here to correct *Bot. Record Club Report* for 1883, where on p. 6 the above find stands reported by me for Denbighshire—in confirmation of queried record. This must be withdrawn.

NOTES ON CEIBA.

BY JAMES BRITTEN, F.L.S., AND EDMUND G. BAKER, F.L.S.

THE following notes have been drawn up in the course of a revision of the material in the British Museum Herbarium: we have also consulted the specimens at Kew. The three species described do not correspond with any specimens or descriptions we have seen, and we therefore suppose them to be new. A note on the synonymy of the one species common to both hemispheres is prefixed, and an arrangement of the genus is appended.

CEIBA Adans. Fam. Pl. ii. 399 (1763).

C. CASEARIA Medic. Malven-Familie, 16 (1787).
C. pentandra Gaertn. Fruct. ii. t. 133 (1791); K. Schum. in Mart. Fl. Bras. xii. 3, 209 (1886).
Bombax pentandrum L. Sp. Pl. 511 (1753); Jacq. Stirp. Amer. 191, t. 176, fig. 70 (1763).
Eriodendron anfractuosum DC. Prodr. i. 479 (1824), et auct. plur.
Bombax orientale Spreng. Syst. iii. 124 (1826).
Bombax occidentale Spreng. *l. c.**
Gossampinus albus Hamilt. in Trans. Linn. Soc. xvii. 126 (1826).
Bombax guineense Thonn. in Schum. & Thonn. Beskr. Guin. Pl. ii. 76 (1827).
Eriodendron caribæum G. Don in Loud. Hort. Brit. 292 (1830).
Eriodendron guineense G. Don, *l. c.*
Eriodendron occidentale G. Don, Gen. Syst. i. 513 (1831); Kosteletzky, Allgem. Med.-Pharm. Flora, iv. 1876 (1835); Tr. & Pl. in Ann. Sci. Nat. sér. 4, xvii. 322 (1862).
Gossampinus Rumphii Schott & Endl. Meletem. 35 (1832).
Eriodendron orientale Kostel. *l. c.* 1875 (1835).
Eriodendron pentandrum Kurz in Journ. As. Soc. Bengal, xliii. ii. 113 (1874).
Xylon pentandrum O. Kuntze, Revis. Gen. Plant. 75 (1891).

C. Schottii, sp. n. Arbor? Foliola digitatim disposita. Foliola (immatura?) oblanceolata vel oblonga, apice acuta vel subacuminata mucronata rarius emarginata ad basin attenuata utrinque sparsissime pilis albidis obtecta, margine integra subtus subpallidiora, nervo medio prominente. Petiolus communis strictus,

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* Sprengel, who first separated the Old World and New World forms, also refers to his *occidentale* *B. mompoxense* H. B. K. v. 300 (1821), but Mr. Jackson keeps this distinct. It was originally described from imperfect material, the flowers and fruits being unknown, and no further light, so far as we are aware, has been thrown upon it.

$1\frac{1}{4}$–$1\frac{3}{4}$ poll. longus, petioluli $\frac{1}{3}$–$\frac{1}{2}$ poll. longi. Flores actinomorphi. Calyx coriaceus bilobatus, externe glaber, interne pallide aureo-brunneo-sericeus, circiter 1–$1\frac{1}{2}$ poll. longus. Petala haud expansa late linearia externe rufo-tomentosa, apice subobtusa, circiter $2\frac{1}{2}$ poll. longa. Stamina (immatura?) petalis breviora, filamenta glabra medium versus in tubum cylindricum connata, tubus fere 1 poll. longus. Antheræ ut in Cucurbitaceis undulato-plicatæ. Stylus glaber, stamina superans.

Hab. Merida, Yucatan, *Schott*. "Pochote."

We are unable to determine the number of leaflets, they having become detached from the common petiole. It is allied to *C. æsculifolia* (= *Bombax æsculifolium* H. B. K. (*Eriodendron* DC.)) and *C. tomentosa*. The former differs by its leaflets being serrated at the margins; in the latter the leaflets are also serrated, and the staminal column is much shorter, and correspondingly the free filaments are longer. Also allied to *C. Burchellii* K. Schum., from Brazil, but this plant has a more cylindrical calyx. There is a plant in the Kew Herbarium, collected by Bernoulli and Cario in Guatemala, No. 3128, which is very closely allied, but the lobes of the calyx are slightly mucronate.

We have two sheets in the British Museum Herbarium from Herb. Pavon, labelled "Bombax erianthos de Mexico." These seem to agree very nearly with the description based upon imperfect material of *Bombax æsculifolium* (H. B. K. Nov. Gen. v. 298). The leaflets are not, however, smooth below, but slightly ferruginous tomentose on the veins and at the base. The petals are broadly linear and ferruginous hirsute externally, and about 3 in. long, whereas Kunth describes those of *æsculifolium* as "subquinque-pollicaria"; he adds, however, "nonnisi fragmenta floris vidi." In the Pavon plant the style is hirsute towards the apex, while in *B. æsculifolium* it is described as glabrous.

C. boliviana, sp. n. Arbor. Ramuli haud armati cortice glabro plumbeo-rubro. Folia 3–4-foliolata. Foliola obovata vel late oblanceolata, apice acuminata ad basin attenuata utrinque glabra, margine integra vel parce serrulata, $2\frac{1}{2}$–3 poll. longa, subtus nervo medio prominente venis tenuibus subparallelis breviter petiolulata (petiolulus 2–$2\frac{1}{2}$ lin. longus). Petiolus communis strictus, $1\frac{1}{4}$–$1\frac{1}{3}$ poll. longus. Flores inter maximos generis zygomorphi. Calyx crassus coriaceus, externe glaber vel glabriusculus, interne pallide tomentosus, $1\frac{1}{4}$ poll. longus, 3-lobatus, lobi rotundati vel subacuti. Petala crassa obovata, circiter $3\frac{1}{2}$ poll. longa, staminibus paulo breviora externe et interne præcipue superne tomentosa. Staminum columna basi ovarium cingens sursum in filamenta quinque divisa, tubo stamineo quam calyce paulo longiore in medio coronula staminodiorum cincto. Stylus curvatus glaber, staminibus subæquilongus, stigmate capitato. Fructus immaturus, $1\frac{1}{4}$ poll. longus, rubro-fuscus, pedunculus fructigerus validus, circiter $\frac{1}{2}$ poll. longus, glaber.

Hab. Bolivia, Vic. Cochabamba, *M. Bang*, No. 1154.

Allied to *C. pubiflora* K. Schum., but the flower is considerably larger in all its parts.

C. Mandoni, sp. n. Arbor? Ramuli læves teretes. Petiolus quam lamina foliolorum longior lævis teres. Folia palmatim 6–7-foliolata, subtus pallidiora. Foliola petiolulata ovata vel ovato-lanceolata acuminata membranacea utrinque glabra, margine argute serrata, 2½–4 poll. longa. Flores breviter pedunculati leviter zygomorphi. Calyx campanulatus lobatus extus glaber lobis triangularibus interne albo-tomentosus. Petala circiter 3¼ poll. longa, calycem 3-plo superantia oblongo-ovata præcipue extus albo-sericea. Tubus stamineus cylindricus calyci subæquilongus ad apicem coronula staminodiorum cinctus. Stamina petalis subæquilonga vel paulo breviora. Antheræ anfractuosæ.

Hab. Viciniis Sorata ad radicem collis Catarguata in scopulis. Prov. Larecaja, Bolivia, *G. Mandon*, No. 825; alt. 2550 metres.

This plant is closely related to *Ceiba boliviana*, the chief points of difference being the leaflets in *C. Mandoni* are more numerous, more membranous, slightly more longly petiolulate, and with strongly marked serrations like the teeth of a saw; and the main petiole is much longer than the longest of the leaflets, while in our specimens of *C. boliviana* it is shorter. There is considerable similarity in the calyx of the two species. The position of the staminodial annulus differs; in *C. boliviana* it is about the centre of the joined portion of the filaments, while in the present species it is much nearer the apex.

Petiole (of *C. Mandoni*) 4–6 in. long. Leaflets 2¼–4 in. long, 1–1½ in. broad at the broadest part, which is about or a little above the centre. Petiolules ¼–½ in. long. Peduncle ¼–½ in. long. Calyx ¾–1 in. long. Petals 3¼ in. long.

Sect. I.—CAMPYLANTHERA Endl.

α. Flores mediocres.

1. C. CASEARIA Medic. Malv. 16 (1787). *C. pentandra* Gaertn.; K. Schum. in Mart. Fl. Bras. xii. pt. iii. 209. For extended synonymy see p. 170.

Hab. Widely spread in the tropics of both hemispheres.

β. Flores maximi.

+ Tubus stamineus in medio inflatus.

2. C. SAMAUMA K. Schum. *l. c.*
Hab. Brazil. Peru or.

+ + Tubus stamineus cylindricus.

3. C. BURCHELLII K. Schum. *l. c.*
Hab. Brazil. *Burchell*, No. 8514!

4. C. SCHOTTII Britten & Bak. fil.
Hab. Yucatan, *Schott*, sine no.!

5. C. TOMENTOSA. *Eriodendron tomentosum* Robinson in Proc. Am. Acad. xxi. (1894), 314.
Hab. Mexico, *Pringle*, No. 5300 (1892), and No. 4733 (1894)! Has a slight annular ring.

6. C. ÆSCULIFOLIA. *Bombax æsculifolium* H. B. K. Nov. Gen. et Sp. v. 298.
Hab. Campeche. Mexico, *Pringle*, No. 5324, ex Robinson, *l. c.*

Sect. II.—Eriodendron K. Schum.

7. C. erianthos K. Schum. *l. c.*
Hab. Brazil!

8. C. Rivieri K. Schum. *l. c.* 212, t. xli.
Hab. Brazil!

? 9. C. microphylla K. Schum.
Hab. Brazil, *Sellow*.

Dr. Schumann describes this species, of which he has only seen imperfect material, in a note in Fl. Bras. *l. c.* 213. He states that its alliance seems to be with *C. Rivieri*.

Sect. III.—Erione.

* Species Centrali-Americanæ.

10. C. grandiflora Rose in Contrib. U.S. Herb. i. No. 9, 308.
Hab. Mexico, *Palmer*, No. 1050!

We have followed Mr. Rose in placing this plant in *Erione*.

11. C. rosea K. Schum. *l. c.* 205 in not.
Hab. Panama, *Seeman*, No. 1630!

* * Species Australi-Americanæ.

⊙ Petala circiter $1\frac{1}{4}$ poll. longa.

12. C. jasminodora K. Schum. *l. c.* 213.
Hab. Brazil.

⊙ ⊙ Petiola longiora, $2\frac{3}{4}$–$3\frac{1}{2}$ poll. longa.

+ Folia 3–4-foliolata. Petiolus quam foliola brevior.

13. C. boliviana Britten & Bak. fil.
Hab. Bolivia!

+ + Folia 4–5-foliolata. Petiolus quam foliola longior.

14. C. pubiflora K. Schum. *l. c.* 213.
Hab. Brazil! Paraguay!

Morong No. 1075, from the Pilcomayo River, distributed from the Columbia College Herbarium as *Chorisia*, is apparently this species.

+ + + Folia 6–7-foliolata. Petiolus quam foliola longior.

15. C. Mandoni Britten & Bak. fil.
Hab. Bolivia!

Species non satis nota.

C. phæosantha K. Schum. *l. c.*
Hab. Grown in an Algerian garden, probably from Brazil.

It seems doubtful whether *Eriodendron trichistandrum* A. Gray, Bot. U.S. Explor. Exp. i. 182, will eventually be referred to this genus.

Chorisia soluta Donnell-Smith in Bot. Gaz. xvi. 1, seems to have affinities with *Ceiba pubiflora* K. Schum., but the five filaments divide, forming ten branches.

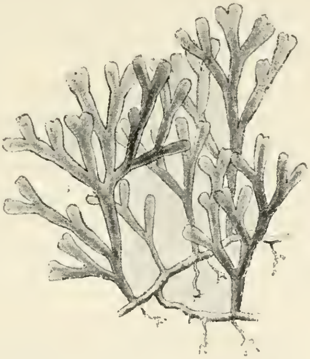
A NEW SPECIES OF CAULERPA.

By George Murray, F.R.S.Ed.

Among the numerous interesting seaweeds collected by Mr. H. G. Flanagan, and sent to Miss Barton, there has occurred a very pretty *Caulerpa* of simple structure, which I find to be new. I have named it with much pleasure after Miss Barton, who has done so much to advance our knowledge of the seaweeds of South Africa.

Caulerpa Bartoniæ, sp. n. Frondibus a surculo repente glabro ramoso erectis, nudis (ramentis nullis) complanatis, ligulatis, 2–4 centim. longis, 1–1½ millim. latis, supra petiolum brevem identidem dichotomis, interdum fastigiatis, parce constrictis, margine integro, apice obtuso; rhizinis brevibus, tenerrimis.

Hab. In rupibus submersis ad oras Africæ austr. (Kaffraria Brit.).



The species falls into the section *Zosteroideæ* of Agardh's classification of *Caulerpa*, and particularly near *C. ligulata*, from which it differs mainly in the very frequently repeated dichotomous branching of the fronds, the absence of a rugulose petiole, so characteristic of *C. ligulata*, and of course very greatly in stature.

In many ways there is a resemblance to *C. Freycinetii* (sect. *Thuyoideæ*), but the fronds do not possess the beautiful regular dentate margin of this species, nor the regular strongly-marked petiole. *C. Bartoniæ* is a much smaller and slighter species altogether. Zanardini (Plant. in mari rubro, &c., in *Mem. dell. Istituto Veneto*. vii. 1857, p. 283, tab. xiv. fig. 2) has described and figured a var. *integerrima* of *C. Freycinetii* with an entire margin. The figure, however, is of a much larger plant with yellow-tipped fronds, and in fact very little indication that it is a *Caulerpa* at all. Moreover, its occurrence at Suez scarcely encourages one to regard this variety as identical with the well-marked species I now describe. I may say that if Zanardini's plant be a *Caulerpa*, it is exceedingly unlikely to be a variety of *C. Freycinetii*, which displays with unvarying constancy the same characters whether it occurs in the

West Indies, the Pacific, the Malayan seas, the Indian Ocean, or the Red Sea itself, from which the British Museum possesses characteristic specimens collected by Schweinfurth at Suakim. Moreover, Zanardini's plant appears to want altogether the strong surculus of *C. Freycinctii.*

REVISION DES ROSA DE L'HERBIER BABINGTON.

Par François Crépin.

J'ai reçu, au commencement du mois de Janvier de cette année, tous les *Rosa* des herbiers de l'Université de Cambridge en communication, à l'effet d'en faire la revision.

Ces *Rosa* appartiennent à trois collections distinctes: herbier de Babington, comprenant 350 feuilles; herbier de Lindley, avec 163 feuilles; et herbier général, comptant 687 feuilles.

L'herbier de Babington ne comprend exclusivement que des *Rosa* recueillis dans les Iles Britanniques. Ceux-ci seuls seront visés dans la présente notice.

Babington n'avait pas fait du genre une étude spéciale comme il l'avait faite pour le genre *Rubus*, et, dans sa collection, on ne trouve, sur aucune feuille, des remarques marquant que cet auteur ait eu des idées personnelles sur l'une ou l'autre espèce de ce groupe générique. Malgré cela, sa collection est intéressante par les nombreux matériaux réunis pendant une longue carrière scientifique.

Je dois mentionner que cette collection a été examinée par M. J. G. Baker, qui, sur nombre de feuilles, a émis son avis sur l'identité spécifique des spécimens.

Rosa arvensis Huds. Beaucoup de spécimens du *R. arvensis* sont rapportés à la variété *bibracteata* (Bast.). Ce nom, ou du moins sa signature, devra disparaître, parce que le *R. bibracteata* Bast. paraît être réellement un *R. sempervirens* × *arvensis*, et non pas une variété du *R. arvensis.*

Ce n'est peut-être pas le nom seul qui est appelé à disparaître, mais encore la variété elle-même. Le même individu ne peut pas offrir deux variétés, or la plupart des buissons du *R. arvensis* présentent *à la fois* des ramuscules uniflores et pluriflores, qui, séparés dans les herbiers, constituent, d'un côté, la variété *bibracteata*, et, de l'autre, la variété *genuina*. Ces deux *états* de l'inflorescence se présentent dans toutes les variations du type d'Hudson, qu'elles soient à feuilles pubescentes ou glabres, à dents foliaires simples ou glanduleuses, à pédicelles lisses ou glanduleux, à réceptacles ovoïdes ou arrondis.

La variété *gallicoides* (*R. gallicoides* Déségl.) est représentée dans l'herbier Babington par des spécimens bien caractérisés recueillis à Cesterton Wood, près de Myton, par MM. Bromwich et Bagnall.

L'état glanduloso-sétigère qui caractérise la variété *gallicoides* produit, dans d'autres types spécifiques, des variétés analogues à celle-ci.

La variété *gallicoides*, à glandulosité très marquée, est reliée au type par une série de variations intermédiaires qui ont reçu divers noms.

ROSA SEMPERVIRENS L. Si le *R. sempervirens* L. existait dans les Iles Britanniques à l'état indigène, c'est bien sur les côtes méridionales de l'Angleterre où l'on aurait le plus de chance de le rencontrer, or là aucune trace de cette espèce n'a jamais été observée.

Quant aux spécimens que j'ai eu l'occasion de voir dans les herbiers, ils me paraissent avoir été recueillis sur des pieds provenant d'anciennes cultures et trouvés dans le voisinage des habitations. C'est sans doute le cas pour les échantillons que MM. Towndrow et Linton ont recueillis près de Malvern (Worcestershire). J'ai vu des spécimens de cette localité dans les herbiers de Babington et de M. Linton, et j'en possède qui m'ont été donnés par M. Nicholson. Il ne peut s'élever aucun doute sur l'identité spécifique de la Rose que M. Towndrow a distribuée sous le nom de *R. Melvini;* c'est bien une variété du *R. sempervirens* L. qui, par sa colonne stylaire parfaitement glabre, doit venir se ranger dans le voisinage du *R. prostrata* DC. M. Baker l'avait, dans l'herbier Babington, dénommée sous le nom de *R. stylosa* var. *microcarpa*. Elle a fait l'objet de remarques dans le *Report* de 1886 (pp. 152 et 153) du *Botanical Exchange Club.*

Dans l'herbier du Jardin Botanique d'Édimbourg j'ai vu : 1° des échantillons recueillis près de Dumfries, en 1838, par M. J. Cruickskant, à colonne stylaire faiblement hérissée, qui me paraissent appartenir au *R. sempervirens* L.; 2° des spécimens récoltés à Cramond Bridge (M. Lothian) par M. F. Webb, en 1876 et 1879, dans la haie d'un jardin, à colonne stylaire glabre, et qui sont probablement encore du *R. sempervirens*, de même que des échantillons récoltés, en 1848, au bord d'un chemin aux environs de Burntisland dans le comté de Fife.

ROSA STYLOSA Desv. Parmi les variétés et variations du *R. stylosa* Desv. renfermées dans l'herbier Babington, et dont bon nombre peuvent recevoir le nom de *R. systyla* Bast., il y a des formes rapportées au *R. leucochroa* Desv. Selon M. W. Moyle-Rogers (conf. *Report* de 1888, pp. 216, 217), le *R. leucochroa*, fort répandu dans le comté de Devon, aurait un cachet bien spécial et bien distinct de celui du *R. systyla* Bast.

La variété proposée par moi sous le nom de *pseudo-rusticana*, et décrite par M. Rogers dans le *Journ. Bot.* (1889, p. 23), peut-elle être rapportée spécifiquement au *R. stylosa ?* Le doute est permis en présence de certaines particularités fort singulières, et qui sont les suivantes : stipules supérieures et bractées remarquablement dilatées, colonne stylaire aussi longue que celle du *R. arvensis*, disque peu relevé autour de l'orifice, feuilles ordinairement 5-foliolées, aiguillons fort rares. Cette forme réclame de nouvelles observations faites sur le vif avec beaucoup d'attention.

Lindley, dans sa monographie, p. 111, décrit une var. *β. lanceolata* du *R. systyla*. L'échantillon de cette variété conservé dans l'herbier de Lindley est une variation du *R. micrantha* Sm. à styles devenus exserts par une contraction des réceptacles due à la dessiccation. L'exsertion accidentelle des styles a trompé bien des auteurs et leur a fait commettre des erreurs.

La variété γ. *Monsoniæ* du même monographe est, selon toute apparence, un *R. gallica* × *arvensis*.

Dans la 9e édition du *London Catalogue of British Plants* (1895), on trouve une variété f. *evanida* Christ. Cette Rose, décrite dans le *Report* de 1879, p. 12, est-elle bien une variété du *R. stylosa?* Il y a lieu d'en douter. J'ai sous les yeux les nombreux échantillons envoyés, en 1879, par M. Nicholson à M. Christ. Faisons tout d'abord remarquer que l'expression du "biserratis" appliqué aux folioles n'est pas tout-à-fait exacte, attendu que les dents simples sont beaucoup plus nombreuses que les dents doubles, et qu'en outre on ne trouve de pubescence sur les feuilles que le long du canal du pétiole.

Dans cette variété *evanida*, les aiguillons n'ont pas la forme caractéristique de ceux du *R. stylosa;* les styles, qui sont parfaitement glabres, ont bien une exsertion qui les fait ressembler à ceux du *R. stylosa*, mais il reste à voir si cette exsertion est normale, si elle existe dans les fleurs fraîches et dans les réceptacles non desséchés. J'ai lieu de supposer que cette saillie des styles est la même que celle qui se produit assez souvent dans les *R. micrantha* Sm. et *R. tomentella* Lem. Mon sentiment est que cette variété n'appartient pas au *R. stylosa*, et qu'il faut probablement lui chercher une place dans le groupe du *R. andegavensis* Bast.

ROSA CANINA L.

1. *Variétés du groupe R. lutetiana* Lem.

A en juger par les caractères qui lui sont assignés, le *R. surculosa* Woods paraît devoir faire partie de ce groupe, qui est caractérisé par des feuilles glabres à dents simples et par des pédicelles lisses. Mais ce nom de *surculosa* a-t-il été appliqué à une variété bien précise? Je ne le pense pas. Woods, comme les auteurs qui l'ont suivi, paraît avoir eu en vue diverses variations vigoureuses, à folioles de forme assez variée et à inflorescence exceptionnellement pluriflore ou multiflore à pédicelles lisses ou parfois hispides-glanduleux.

M. Baker, dans sa monographie, décrit une variété *senticosa* qu'il identifie au *R. senticosa* Ach. et au *R. aciphylla* Rau, or le *R. senticosa* Ach., dont j'ai vu des échantillons authentiques dans les herbiers de Lund et de Königsberg, appartient au *R. glauca* Vill.; et quant au *R. aciphylla* Rau, il n'a pas encore été observé en Angleterre. En dehors de la plante des environs de Wurzbourg décrite par Rau, et celle de la vallée de la Nahe (Prusse Rhénane) que j'ai décrite sous le nom de *R. exilis*, et qui est à réunir au *R. aciphylla*, aucune des formes que j'ai vues dans de nombreuses collections sous le nom de *R. aciphylla* ne peut être identifiée au vrai *R. aciphylla*, qui est une miniature vraiment très curieuse et très rare du *R. canina*.

2. *Variétés du groupe R. dumalis* Bechst.

Ce groupe comprend, comme le précédent, un très grand nombre de variétés et de variations, parmi lesquelles vient se ranger le

R. sarmentacea Woods. Ce nom ne répond aucunement à une variété précise, mais à une réunion de formes diverses, qui n'ont en commun que des folioles à dents plus ou moins composées-glanduleuses et des pédicelles lisses.

Dans le groupe du *R. dumalis*, les dents foliaires sont tantôt simplement doubles, tantôt plus ou moins abondamment glanduleuses. Ce qu'on a décrit sous le nom de *R. biserrata* Mér. sont des variations à dents très glanduleuses. Dans ce groupe, les sépales sont tantôt parfaitement églanduleux, tantôt pourvus de glandes assez nombreuses.

On a rapporté erronément à ce groupe le *R. venosa* Sw., or cette Rose, d'après les spécimens authentiques que j'ai vus dans plusieurs herbiers, appartient au *R. glauca* Vill.

3. *Variétés du groupe R. andegavensis* Bast.

Des variétés de ce groupe existent çà et là dans les Iles Britanniques, mais il n'y en a aucun spécimen dans l'herbier Babington. Les formes de ce groupe sont caractérisées par des feuilles glabres, à dents toutes ou presque toutes simples, à pédicelles plus ou moins glanduleux, et à glandes envahissant parfois les réceptacles et les sépales.

4. *Variétés du groupe R. verticillacantha* Mér.

Les variétés et variations de ce groupe diffèrent seulement de celles du groupe précédent par leurs dents foliaires doubles ou composées-glanduleuses. Chez elles les nervures secondaires ne sont pas glanduleuses. Ce groupe est au groupe *R. dumalis*, ce que le groupe *R. andegavensis* est au groupe *R. lutetiana*.

L'herbier Babington renferme entre autres variétés du *R. verticillacantha*, celles que Briggs a recueillies dans le sud du comté de Devon, et que Déséglise a décrites sous les noms de *R. aspernata* et *R. latebrosa*. Le premier de ceux-ci a les pédicelles, les réceptacles et les sépales abondamment glanduleux, tandisque le second a les réceptacles et le dos des sépales églanduleux. Le *R. latebrosa* présente parfois, sur certains points de ses axes, des acicules ou des aiguillons sétacés qui font défaut dans le *R. aspernata*.

5. *Variétés du groupe R. scabrata* Crép.

Les variétés de ce groupe sont caractérisées par des feuilles glabres à dents composées-glanduleuses et à nervures secondaires chargées de glandes plus ou moins nombreuses et par des pédicelles et réceptacles lisses.

Le No. 28 de l'*Herbarium Rosarum* de M. Baker, distribué sous le nom de *R. vinacea* Bak., appartient à ce groupe. M. Linton en a recueilli une variété dans le Warwickshire. La forme distribuée en 1887 par le Botanical Exchange Club sous le nom de *R. agrestis* Savi, *inodora* Fries, paraît devoir se rapporter à ce même groupe.

6. *Variétés du groupe R. Blondæana* Rip.

Les variétés de ce groupe ne diffèrent de celles du groupe précédent que par la présence de glandes sur les pédicelles et parfois sur les réceptacles.

Le No. 27 de l'*Herbarium Rosarum* de M. Baker, distribué sous le nom de *R. arvatica* Bak., est à rapporter à ce groupe, comme aussi des spécimens recueillis à Yeldersby par M. Linton.

Dans l'herbier Babington, il y a un échantillon récolté par M. Bloxam dans le Warwickshire avec le nom de *R. pulverulenta*, qui fait encore partie de ce groupe.

Les variétés visées dans la monographie de M. Baker sous le nom de *R. Blondæana* Rip. et rapportées à la variété *marginata* de cet auteur sont étrangères au groupe du *R. Blondæana* Rip.

7. *Variétés du groupe R. dumetorum* Thuill.

Ce groupe est constitué de variétés du *R. canina* à feuilles plus ou moins pubescentes, à dents presque toutes simples et à pédicelles lisses. La pubescence, qui peut être plus ou moins abondante sur les deux faces des folioles, se réduit parfois à la pubescence de la seule nervure médiane. Un certain nombre des variétés de ce groupe ont été décrites comme des espèces distinctes : *R. platyphylla* Rau, *R. urbica* Lem., *R. semiglabra* Rip., *R. Forsteri* Sm., etc.

8. *Variétés du groupe R. Deseglisei* Bor.

Les variétés de ce groupe ne diffèrent de celles du groupe précédent que par la présence de glandes sur les pédicelles, glandes qui peuvent parfois envahir le réceptacle. Certaines variétés de ce groupe ont été rapportées erronément au *R. collina* Jacq., qui est un *R. gallica* × *canina*.

Rosa obtusifolia Desv. Dans sa monographie, M. Baker ne décrit pas le *R. obtusifolia* Desv., mais il dit que sa variété *concinna*, qui est à pédicelles glanduleux, représente, en Angleterre, le *R. obtusifolia* du Continent, et il fait remarquer en outre que sa variété *frondosa* est voisine de l'espèce de Desvaux. Faisons remarquer que le nom de *R. frondosa* Stev. est à rejeter, par ce fait que Steven a distribué sous ce nom des formes très différentes les unes des autres.

Le *R. obtusifolia* est une espèce de second ordre qu'il n'est pas toujours facile, sur échantillons d'herbier, de distinguer avec certitude de certaines variétés du *R. canina* du groupe *R. dumetorum*. Cette difficulté peut tenir non-seulement à l'insuffisance des matériaux conservés dans les herbiers, mais peut-être encore à ce que cette espèce n'est pas encore parfaitement isolée et conserve encore des liens avec le *R. canina* dont elle paraît être dérivée.

Je considère le *R. obtusifolia* Desv. comme une variété à dents simples du *R. tomentella* Lem. Il est répandu çà et là dans les comtés méridionaux de l'Angleterre, où il semble suivre l'aire de distribution du *R. stylosa*. Existerait-il en Irlande ? Je n'en ai pas vu de spécimens dans l'herbier du Museum de Dublin, ni dans celui de Moore. Monterait-il vers le nord jusqu'en Ecosse ? J'ai bien vu, dans l'herbier d'Edimbourg, des échantillons recueillis par Webb, en 1876, près de Burntisland, que j'ai cru pouvoir rapporter, mais sans certitude au *R. obtusifolia*.

Afin d'éviter les confusions entre le *R. obtusifolia* et des variétés du groupe *R. dumetorum*, les collecteurs feront bien de ne distribuer le premier qu'en parts représentées par des matériaux suffisamment complets.

(To be continued.)

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

William A. Clarke, F.L.S.

(Continued from p. 86.)

Zostera marina L. Sp. Pl. 968 (1753). **1666.** "In maritimis & folio angustiori from the Severn Sea."—Merrett, 3.

Z. nana Roth, Enum. Pl. Germ. i. 8 (1827). **1847.** Poole Harbour, Dorset. Mr. Borrer.—Bab. Man. ed. 2, 346; and E. B. S. 2931.

Naias flexilis Rostk. & Schmidt, Fl. Sedin. 382 (1824). **1850.** On Oct. 11, 1850, at the Botanical Society of London, "Mr. Daniel Oliver, jun., exhibited specimens discovered by him in a pond near Roundstone, Connemara, Ireland, in August last."—Phytol. iii. 1088.

N. marina L. Sp. Pl. 1015 (1753). **1883.** Found by Mr. Arthur Bennett in Hickling Broad, East Norfolk, on 21st July, 1883.—Journ. Bot. 1883, 246, 353.

Eriocaulon septangulare With. Bot. Arr. ed. 3, ii. 184 (1796). **1770.** "Found, September, 1768, in a small lake in the island of Skye, by James Robertson."—Phil. Trans. lix. 241. "In a small lake by the roadside leading from Sconsar to Giesto, in Skye, 11th Sept. 1764. Sir John Macpherson, who indeed first noticed it, leaped from his horse, waded into the lake, and brought it out."—Dr. Walker in Hook. Fl. Scot. 270.

Cyperus fuscus L. Sp. Pl. 46 (1753). **1821.** "A. H. Haworth, Esq. . . . . found it in a low marshy meadow scarcely half a mile from his late residence in Little Chelsea."—Hook. Fl. Lond. t. 85. See Journ. Bot. 1871, 148. "Peat pond on Shalford Common," Surrey. J. D. Salmon, 16 Aug. 1846.—Phytol. ii. 609 (1847).

C. longus L. Sp. Pl. 45 (1753). **1688.** "D. Newton in Insula Purbeck dicta Dorcestriæ Angliæ eum invenit."—Ray Hist. ii. 1299.

Eleocharis acicularis R. Br. Prod. 224 (1810). **1677.** "Juncellus omnium minimus capitulis Equiseti. Binsey Common" (Oxon).—Plot, N. H. Oxon. 145.

E. palustris R. Br. Prod. 224 (1810). **1633.** "Juncus minor capitulis Equiseti. Club Rush . . . . growes in watery places."—Ger. em. 35, 5.

E. uniglumis Link, Hort. Berol. i. 284 (1821). **1847.** Aberdeenshire, Dr. Dickie.—Bab. Man. ed. 2, 349.

E. multicaulis Sm. Eng. Fl. i. 64 (1824). **1800.** "At Corryhattachan, Isle of Skye, discovered by Mr. John Mackay in 1794."—Sm. Fl. Brit. i. 49.

Scirpus pauciflorus Lightf. Fl. Scot. 1078 (1777). **1777.** "Upon Malghyrdy in Breadalbane [Co. Perth], Mr. Stuart."—Lightfoot, *l. c.*

S. cæspitosus L. Sp. Pl. 48 (1753). **1666.** "Beyond the Windmill at Adington in Surrey where Peat is dig'd."—Merrett, 58. "Circa Middleton & alibi in agro Warwicensi."—Ray Cat. 181 (1670).

S. nanus Spreng. Pugillus, i. 4 (1813) (*S. parvulus* Roem. & Schult. Syst. Veg. ii. 124 (1817). **1841.** Edinburgh Cat. Brit. Pl. ed. 2. "Found in Hampshire."—Bab. in Phytol. i. 310 (1842). "Collected in July, 1837, at Lymington, Hants, in the newly excavated swimming bath."—G. E. Smith in Herb. Mus. Brit.

S. fluitans L. Sp. Pl. 48 (1753). **1688.** "Ad nos transmisit D. Dodsworth: Invenio etiam inter Gramina sicca D. Philippi Skippon hujus specimina, à nobis collecta in Cambria propè Madern & alibi, quamvis per oblivionem in Catalogo Plantarum Angliæ illud omisi."—Ray Hist. ii. 1310.

S. cernuus Vahl, Enum. ii. 245 (1806). (*S. Savii* Seb. & Maur. Fl. Rom. Prod. 22 (1818). **1831.** "Anglesea, July 8, 1828."—W. Wilson in Bot. Miscell. ii. 134, as *S. setaceus; S. Savii* was, however, intended (see E. B. Suppl. 2782, where the plant is first recorded under that name, and Wilson's specimens in Herb. Mus. Brit.). "Juncus maritimum exile Plimostii" (Park. Theatr. 1270) is probably the same species, which is abundant about Plymouth: see Briggs, Fl. Plym. p. xxviii.

S. setaceus L. Sp. Pl. 49 (1753). **1634.** "Juncellus omnium minimus, Chamæschœnos. Dwarfe-rush."—Johns. Merc. Bot. 45.

S. Holoschœnus L. Sp. Pl. 49 (1753). **1688.** "Nuper in Anglia detexit in comitatu Somerseti D. Stephens."—Ray Hist. ii. 1303.

S. lacustris L. Sp. Pl. 48 (1753). **1597.** "In standing pooles and by rivers sides."—Ger. 31. "Harefield" (Middx.).—Blackstone, Fasc. 46 (1737).

S. Tabernæmontani Gmel. Fl. Bad. i. 101 (1805). **1696.** "In the Sea-ditches at Bricklesey and Mersey-Island. Mr. Dale." Ray Syn. ii. 273. See Fl. Midd. 301.

S. carinatus Sm. E. B. 1983 (1809). **1716.** "Juncus aq. major carinatus. Doody's furrowed Bull-rush. This Mr. Doody has observed about Limehouse; I have also found it in his Company near the Thames, on this side Battersey Meadows."—Petiver, Concordia Graminum no. 199.

S. triqueter Linn. Mant. i. 29 (1767). **1666.** "At the Horse-ferry at Westminster. Hunc mihi primus ostendit Dr. Dale insignis Botanicus."—Merrett, 67.

S. maritimus L. Sp. Pl. 51 (1753). **1629.** "Ad insulam Sheppey . . . Cyperus rotundus inodorus septentrionalium Lob." —Johns. Kent, 5; cf. Johns. Merc. Bot. 32. "In the Isle of Shepey it fills almost every ditch."—Curtis, Fl. Lond. iv. 4 (c. 1783).

S. sylvaticus L. Sp. Pl. 51 (1753). **1632.** Hampstead Heath. —Johns. Enum. ("Cyperus gramineus sive miliaceus Lob.").

S. Caricis Retz. Prod. 64 (1779). (*Blysmus compressus* Panz (1821)). **1688.** "À D. Newton mihi primum ostensum est a se collectum in aquosis prope Orton Westmorlandiæ vicum necnon circa Chislehurst. Exsiccatum vidi apud D. Plucknet, qui primus illud observâsse dicitur."—Ray Hist. ii. 1910.

S. rufus Schrad. Fl. Germ. i. 133 (1806). (*Blysmus rufus* Link (1821)). **1777.** "In the Isle of Mull."—Lightf. Fl. Scot.

86 & 1138. Specimens from Robert Brown are in Herb. Mus. Brit. labelled "Arbigtland in Galloway, 1769, Dr. Walker, who thought it was the *Schœn. ferrugineus* Lin."—it appears under this name in Lightfoot, 86. Dr. Walker was "its original discoverer," E. B. 1010.

Eriophorum alpinum L. Sp. Pl. 53 (1753). **1794.** "Found by Mr. Brown & Mr. Don in a moss about three miles east of Forfar."—Trans. Linn. Soc. ii. 290. "Moss of Restenet, Forfarshire, first found in Aug. 1791, in company with Mr. George Don." —R. Brown in Herb. Mus. Brit.

E. vaginatum L. Sp. Pl. 52 (1753). **1641.** "Gramen junceum montanum subcærulea spica. Mosse-crops."—Johns. Merc. Bot. pars alt. 23.

E. angustifolium Roth, Tent. i. 24 (1788). **1597.** "Upon a bog at further end of Hampsted heath," &c.—Ger. 27.

E. latifolium Hoppe, Taschenb. 1800, 108. **1794.** "I found this first in bogs in Northamptonshire."—J. Dickson in Trans. Linn. Soc. ii. 289. See also E. B. 563. Specimens collected by Dickson in 1792 are in Herb. Mus. Brit.

E. gracile Koch ap. Roth, Catalect. ii. 259 (1800). **1835.** Discovered in 1835 by Joseph Woods near Halnaby, Yorkshire.—Comp. Bot. Mag. i. 290.

Rynchospora fusca Dryand. in Ait. Hort. Kew. ed. 2, i. 127 (1810). **1716.** "I found this plentifully in a bog between Southampton and Limington in August."—Petiver, Conc. Gram. no. 148.

R. alba Vahl, Enum. ii. 229 (1806). **1633.** "I never found this but once, and that was in the companie of M. Thomas Smith and M. James Clarke, Apothecaries of London; we riding into Windsore Forest upon the search of rare plants."—Johnson, Ger. Emac. 30(2).

(To be continued.)

SHORT NOTES.

Carex depauperata. — Mr. Jackson, in *Index Kewensis*, prints under *Carex*,

"*ventricosa* Curt. Fl. Lond. fasc. vi. t. 68 = depauperata."
"depauperata Good. in Trans. Linn. Soc. ii. (1794), 181."

It is of course obvious that Curtis's name claims precedence over Goodenough's, for it is quoted by the latter when establishing his *depauperata*. Curtis, when describing his plant, says: "The late Rev. Mr. Lightfoot, who had seen it growing with me, was pleased to call it *depauperata*, from the paucity of its flowers, a name in which we sometime acquiesced; but, on maturer consideration, we think the name we have now given it more expressive of its principal character" (Curtis, *l. c.*). Yet it seems to me that *depauperata* must stand as the specific name of the plant, not on the authority of Goodenough, but on that of Curtis, who published it in his *Catalogue of the . . . . Plants cultivated in the London Botanic*

Garden, 1783, p. 92, no. 228. It is true that no description is given, but there is no possibility, in the face of his note cited above, of doubt as to what plant Curtis meant. Moreover, we have in the British Museum specimens from Curtis's garden in 1782, to which Solander has affixed both names; and others from the original Charlton locality, similarly endorsed by Edward Forster. The name *ventricosa* dates from about 1790. Goodenough says Solander named it in his MS. *C. depauperata*, "whom Dr. Withering first followed"; and that name will be found in With. Bot. Arr. ed. 2, 1049 (1787), where it is quoted from "Curt. Cat." The plant should therefore stand as *C. depauperata* Curt. Cat. 92 (1783); and this name must replace *C. ventricosa* in the next edition of the *London Catalogue*.—JAMES BRITTEN.

W. KENT BRAMBLES.—Mr. W. A. Shoolbred and I, last autumn, found two additions to the vice-comital list, viz. *Rubus pubescens* Weihe, var. *subinermis* Rogers, frequent about Stone Street, near Ightham; and *R. adornatus* P. J. Muell., on Bitchett Common. These have been agreed to as correct by Mr. Rogers. — EDWARD S. MARSHALL.

NOTICES OF BOOKS.

Introduction to the Study of Fungi: their Organography, Classification, and Distribution, for the Use of Collectors. By M. C. COOKE, M.A., LL.D., A.L.S. Pp. x, 360. London: Adam & Charles Black.

THE economic importance of a knowledge of the characteristic features and mode of development of the various parasitic Fungi, which cause diseases among farm and garden crops and animals, has often acted as a stimulus in forwarding the study of this class of plants: the exquisite beauty of some of the Hymenomycetes, their edibility, and even the joy of a day spent on a "fungus-foray," have occasionally acted in the same way. For the satisfaction of persons who have been desirous of restricting their study of Fungi in these grooves, admirable treatises have been written suited to their taste. However, for the more limited number of students aspiring to a more complete knowledge of the main features of the whole class of these plants, little has been done. Possibly the constantly changing views and opinions, and the ever-increasing amount of investigation regarding their morphology, development, and classification, acted as a deterrent to publication of a work which would almost necessarily have been out of date as soon as issued from the press. Although among the forty thousand species of Fungi a very large number still occupy the "lumber-room" and await further research before our knowledge of them is satisfactory, the energetic work of specialists during the last ten or fifteen years has cleared away much darkness, and made it possible to lay down broad outlines in regard to the structure, affinities, and other matters connected with this large section of the vegetable kingdom.

In the volume before us Dr. Cooke endeavours to supply the student with a text-book which shall serve as an introduction to the study of Fungi from the modern standpoint. As the title indicates, the work is divided into three parts dealing with—(I.) Organography, (II.) Classification, and (III.) Distribution, respectively.

In Part I. the various forms of mycelia are described, and chapters are given upon the carpophore, form of receptacle and varieties of its contents, fertilisation, saprophytism and parasitism, and such other points relating to the general morphology and physiology of Fungi as shall be of importance in enabling the student to understand the systematic part which follows. The treatment of the subject met with in these chapters is least satisfactory, and does not strike us very favourably in some parts. The use of the term "mycelium," and its plural, "mycelia," in Chapter I. is not always clear, because of the apparently arbitrary manner in which the indefinite and definite articles are used or left out at will. In speaking of the fructification, modern views of the various reproductive bodies are not sufficiently referred to or explained—the term "sporidium" is used for "ascospore," and generally there is a tendency throughout the volume to lean towards the earlier systematist's conceptions. Perhaps there is some excuse for this, as the title of the work states that it is intended "for the use of collectors." However, as Dr. Cooke specially wishes his collectors to be more than the term implies, it might have been well to extend the title to include students, and worth while to devote a considerable paragraph to the views of others than pure systematists in regard to these bodies. A clear, complete, up-to-date account of the term "spore" and all its modifications would not have been out of place, and would have tended to remove one of the chief stumbling-blocks which confront all beginners.

Part II., treating upon the Classification of Fungi, is undoubtedly good. An introductory chapter on Fungi in general concludes with a summary of the views of Brefeld, and later on the schemes of arrangement adopted by Saccardo are discussed and explained. More detailed accounts of the various families and their subsidiary divisions are given, beginning with the Basidiomycetes, and working down to the simpler forms. Most of these chapters are well done, and, although scarcely suited to the beginner, they cover the whole range of classification in a clear manner, and indicate a wide knowledge and experience in dealing with representatives of this branch of the vegetable kingdom. The weakest chapter is that upon "Schizomycetes and Saccharomycetes"; the mere fact of these groups being thrown together, and the absence of bibliographical reference to the researches of Emil Hansen and his pupils upon the latter, is perhaps sufficient evidence of its incompleteness.

An account of geographical distribution, collecting, and a useful glossary, complete the volume.

The copious bibliography at the conclusion of each separate chapter is a useful addition in guiding students to further work.

The figures are useful also, but very disappointing in so far as no idea is given in any of them of their magnification or otherwise.

Notwithstanding that here and there are insinuated what appear to us somewhat unnecessary or obsolete opinions (*e.g.* discussion on hereditary transmission of disease among plants, p. 82; views on Lichens, p. 109), these defects detract very little from a work which supplies a want, and which is well worth the careful attention of all students who are beginning the study of Fungi from a systematic standpoint.

John Percival.

La Botanica in Italia. Materiali per la storia di questa scienzia raccolti da P. A. Saccardo. Venezia: Ferrari. 1895. 4to, pp. 236. Price 10 lire.

Prof. Saccardo in this volume gives us a useful summary of the lives of those who have contributed to our knowledge of Italian botany. It is somewhat in the manner of the *Biographical Index of British Botanists* which was originally issued in these pages, but differs in certain particulars—*e.g.* living as well as dead authors are included, and botanists of other countries who have written on Italian plants are included. After the name of the author, comes the date and place of his birth and death, with some indication of the position he filled; then comes a paragraph containing references to biographical notices, followed by one enumerating his works: in some cases further information is given after the name. We may cite as an example of the manner in which the work is carried out, the account of Mazziari, whose *Flora Corcirese* has been the subject of more than one note in these pages*:—

"Mazziari (Domenico), n. Siena intorno 1790: m. Zante 1857—nel 1815 era insegnante dei figli del Ministro Medici in Napoli, e fu amico di Tenore e Gussone; nel 1817 fu professore d'italiano a Corfù, quindi a S. Maura e Zante. Intorno al 1834 fu dirigente di un orto botanico, allora esisente in Corfù. E l'autore della *Flora Corcirese* stampata negli anni 1834 e 1835 in Corfù nella *Jonios Anthologia*, come risulta dalle notizie per me tratte dall' Archivio di Corfù dal gentile sig. Spiridione Zervòs ingegnere in quell' isola.—*Heufler*, Specimen floræ cryptogamæ Septem Insularum editum juxta plantas Mazziarianas herbarii Heufleriani. Vindob. 1861–68 (Zool. bot. Gesellschaft)—*Pritz.* p. 362—*Britten* in Jour. of Bot. 1883, p. 355—*Sacc.* in Jour. of Bot. 1894, p. 373—L'erbario crittogamico del Mazziari conservavasi fra le raccolte del bar. de Heufler e del Tommasini."

Besides the "Repertorio biografico dei Botanici," which occupies the greater part of the book, we have the bibliography of the botanic gardens of Italy, and a curious chronology of the principal events connected with the progress of botany in Italy, beginning with 440 b.c.—"Empedocle di Girgenti espone, primo d'ogni altro, alcune concetti embrionali sulla fisiologica vegetale"; and ending—"1867. Federico Delpino, in base precipuamente alle sua geniali ricerche sulla dicogamia, distingue ed instaura, come scienzia nuova, la biologia delle piante o dottrina delle loro funzioni di relazione coll' ambiente." At the end are some rather longer "note biografiche," mostly hitherto unpublished, which are in danger of being overlooked.

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* Journ. Bot. 1893, 355; 1894, 373.

Only those who have been engaged in similar work can form an adequate idea of the amount of labour involved in an undertaking of this kind. Of its usefulness when done there can be no doubt: such catalogues are practically a handy epitome of the botany of a country, and the bibliographical references are a guide to its literature. Unfortunately, the number who are sufficiently interested in scientific work is but small; and we trust that Prof. Saccardo will not find himself as much out of pocket by his venture as the compilers of the English *Biographical Index* have been by theirs. His book is admirably printed in double columns, and the broad margins afford ample room for additions and corrections, although we think it would have been more convenient for reference in an octavo form.

JAMES BRITTEN.

ARTICLES IN JOURNALS.

Bot. Centralblatt (Nos. 9–12). — W. Froembling, 'Anatomisch-systematische Untersuchung von Blatt und Axe der Crotoneen und Euphyllantheen' (2 plates). — (No. 12). C. A. M. Lindman, '*Castanea sativa* mit Honigblumen.'

Bot. Gazette (Feb. 18). — R. Thaxter, *Blastocladia* (1 pl.).— W. Deane, 'Michael Schuck Bebb' (b. 23 Dec. 1833; d. 5 Dec. 1895; portrait).—L. M. Underwood, *Fossombronia*.—C. Robertson, 'Flowers and Insects.' — F. H. Knowlton, G. E. Davenport, O. Kunze, & T. Meehan, 'Nomenclature.' — I. Clendenin, '*Lasiodiplodia* E. & E., n. gen.' (1 pl.).

Bot. Zeitung (Mar. 16).—M. Franke, 'Beiträge zur Morphologie und Entwickelungsgeschichte der Stellaten.'

Bull. de l'Herb. Boissier (Jan.). — F. Renauld & J. Cardot, 'Musci Americæ Septentrionalis.' — C. J. Forsyth-Major & W. Barbey, 'Kalymnos.' — J. Freyn, 'Orientalische Pflanzenarten.'— P. Conti, 'Mousses cleistocarpes.'—(Feb.). N. Alboff, 'Les Forêts de la Transcaucasie occidentale.'—A. Jackewski, 'Calosphæriées de la Suisse.' — J. Müller, 'Analecta Australiensia.' — J. Briquet, 'L'Herbier Delessert et Jardin Botanique de Genève.' — Id., 'Jean Müller' (portr.). — G. Schweinfurth, 'Sammlung Arabisch-Æthiopischer Pflanzen.'

Bull. Soc. Bot. France (xli, 8-9: Jan. & Feb.). — A. Chatin, Truffes de Chypre et de Téhéran.' — F. Hy, 'Chênes hybrides.'— P. van Tieghem, 'Loranthacées' (*Basicarpus*, *Stachyphyllum*, *Antidaphne*, genn. novv.). — E. Roze, 'Fleur de l'*Œnothera suaveolens*.'

— E. Mer, 'Formation du bois parfait.' — C. Degagny, 'Sur la division du noyau cellulaire.' — G. Dismier, 'Mousses des environs de Paris.'

Bull. Torrey Bot. Club (Feb. 29).—V. Havard, 'Drink-Plants of N. American Indians.'—A. Hollick, 'Leguminous Pods from Yellow Gravel at Bridgeton, N.J.' (2 pl.).—F. L. Harvey, 'Pyrenomycetes of Maine.'—J. E. Tilden, *Oscillatoria trapezoidea*, sp. n.

Gardeners' Chronicle (Mar. 14). — *Bolbophyllum orthoglossum* Wendl. & Kränzl., sp. n.

Journal de Botanique (Mar. 1, 16). — E. Bonnett, 'Géographie botanique de la Tunisie.' — (Mar. 1). M. Boudier, *Prototremella calospora*, sp. n.—(Mar. 16). C. Sauvageau, *Ectocarpus virescens.*

Oesterr. Bot. Zeitschrift (March). — J. Steiner, 'Ueber einige Flechten von der Adlersruhe des Grossglockner.' — V. Schiffner, '*Wiesnerella*, eine neue Gattung der Marchantiaceen' (1 pl.). — Id., 'Ueber *Marchantia Berteroana* und *M. tabularis.*' — A. Minks, 'Ueber die Protrophie.' — W. Schmidle, 'Beiträge zur alpinen Algenflora.'—J. Freyn, 'Plantæ Karoanæ Dahuricæ.'—G. v. Pernhoffer, 'Hieracia Seckauensia exsiccata.' — J. Tobisch, 'Zur Pilzflora von Kärnten.'

BOOK-NOTES, NEWS, &c.

The Messrs. Linton are about to issue a set of British Hieracia, which should be of service in determining these critical plants. The set will be issued in four or more fascicles, of not less than twenty-five numbers each; price £1 for each fascicle (carriage free). The first two fascicles are in an advanced state of preparation, and the remainder will be ready to send out at intervals of a year or more. Each number will commonly contain a wild and a cultivated specimen; or wild only, if such can be procured to represent the species well; or cultivated only, if the wild are not procured in sufficient quantity. Cultivated specimens are relied on to illustrate the type, since those produced in nature are frequently aberrant or deformed or deficient in foliage, owing to the struggle for existence; whereas plants grown in suitably poor soil, and free from crowding, give specimens such as may be found in nature under favourable circumstances. Address:—Rev. W. R. Linton, Shirley Vicarage, Derby.

The Rev. Horace Waller, rector of Twymell, Northamptonshire, who died at that place on Feb. 22nd, is commemorated by Sir John Kirk in the genus *Walleria.* He was for some time unofficially connected with missionary work in Africa, and subsequently joined the Central African Mission under Bishop Mackenzie; on his return to England he brought an interesting collection of the plants of that region. He took orders in the Established Church in 1867–8, becoming rector of Twymell in 1874.

We are glad to welcome a botanical publication from Ireland, in the shape of *Notes from the Botanical School of Trinity College, Dublin.* This first number contains a very interesting account of the Herbarium of Trinity College, from the pen of its Keeper, Prof. Perceval Wright, and two papers by Mr. H. H. Dixon, his assistant, on the chromosomes of *Lilium longiflorum* and the nuclei of the endosperm of *Fritillaria imperialis*—each illustrated by a plate. Perhaps we may, at some future date, publish some extracts from Prof. Perceval Wright's paper: meanwhile it is useful to have on permanent record this account of the Dublin Herbarium, which the present Keeper has done so much to render accessible.

Marmaduke Alexander Lawson, Director of the Botanical Department, Ootacamund, died at Madras on Feb. 14th. He took his M.A. at Trinity College, Cambridge, in 1864, and was appointed in 1868 to the Professorship of Botany at Oxford—a post which he retained until 1882, when he accepted the Indian appointment which he held until his death. He was at one time much interested in British plants, and contributed to this Journal a paper on the Flora of Skye (*Journ. Bot.* 1869, pp. 108–114); he also paid some attention to Mosses, and enumerated (in *Trans. Bot. Soc. Edinb.* ix. 452) those collected by Robert Brown (Campst.) in Greenland. He monographed the *Combretaceæ* and *Myrtaceæ* for the *Flora of Tropical Africa* (vol. ii. pp. 413–439: 1871), and the *Celastrineæ*, *Rhamneæ*, and *Ampelideæ* for the *Flora of British India* (vol. i. pp. 607–668: 1875); but his systematic work can hardly be considered as of the highest order. In 1882 he was chairman of the Department of Zoology and Botany at the Southampton Meeting of the British Association, and delivered an address on the progress of Systematic Botany. He became a Fellow of the Linnean Society in 1869. Since his departure to India, Lawson seems to have devoted himself exclusively to the duties of his office, and has not, so far as we are aware, contributed to botanical literature.

The *Bulletin de l'Herbier Boissier* for February contains a memoir and bibliography of Jean Müller, best known to systematists by the abbreviation "Muell. Arg."—Argoviensis (from Aargau, the canton in which he was born) having been affixed to his name to distinguish him from the numerous other botanists bearing the same patronymic. He was born of poor parents at Teufenthal on May 9th, 1828, and, after many difficulties, succeeded in raising himself to a high position in the scientific world. Although of late years mainly occupied with lichens, he published important memoirs on phanerogams—notably on the *Euphorbiaceæ* in De Candolle's *Prodromus*, on *Apocyneæ*, *Rubiaceæ*, &c. At the time of his death, which took place on Jan. 28th, Müller was keeper of the Delessert herbarium and director of the botanic garden in Geneva, in which post he is succeeded by M. John Briquet, the author of this memoir. For a full account of the life and work of the deceased botanist we must refer our readers to the *Bulletin*, where will also be found an excellent portrait.

Messrs. Kegan Paul & Co. have published in their International Scientific Series an epitome of Sir John Lubbock's work on Seedlings, which was reviewed at some length in this Journal for 1893 (pp. 23–30). In its present form the book will be useful to many for whom the original work was too costly, as well as too detailed in treatment: it contains nearly half the figures of the larger book. We think, however, that the retention of the same title, even with the words "popular edition" added, is likely to mislead, although of course the relation it bears to the original is clearly stated in the preface.

Mr. Scott Elliot's *A Naturalist in Mid-Africa* is somewhat disappointing. It is described by the author as the "result of a most inconvenient love of Botany," but Mr. Elliot has successfully dissembled his love, for, with the exception of a chapter in which he states his views of the botanical divisions of Africa, there is singularly little about plants. Even the numerous new species which have been described in this Journal are not referred to, nor does Mr. Elliot seem to be aware that the fungi which he says "are in process of description by Miss Smith," were actually published by her in November last (*Journ. Bot.* 1895, 340–344). There are some useful hints on collecting, in the course of which he says, "the brown paper and frames which are recommended at Kew I find entirely unsuitable"; Mr. Elliot amplifies the methods published by him in this Journal for 1892 (356–398). The book is handsomely brought out, the type being large and widely leaded; but it leaves the impression that—to quote the time-honoured criticism—"the author would have succeeded better if he had taken more pains." Mr. Elliot tells us that "the wind of evolution has not yet stirred the dry bones of systematic botany."

The volume on *Bromeliaceæ*, containing over a thousand pages, which Dr. Mez has contributed to the series of Monographs supplementary to DeCandolle's *Prodromus*, has lately been issued. We hope to publish a review of this important work at a future date.

Mr. Vernon H. Blackman, B.A., Scholar of St. John's College, Cambridge, has been appointed an assistant in the Botanical Department of the Natural History Museum. Mr. Blackman will have charge of the Fungi and Lichens.

We have omitted to notice the Hon. Alicia Amherst's *History of Gardening in England*, because we hoped—and still hope—to do so at greater length than has hitherto been possible. But we must not longer delay calling the attention to those of our readers who are interested in gardening and gardening books to this valuable and scholarly addition to the literature of the subject. In a handsome and well-illustrated volume of 400 pages, Miss Amherst has brought together a vast amount of information—much of it hitherto inaccessible—dealing with English horticulture in all its branches.

The death of Mr. John Buchanan is recorded in the *Standard* of March 27th as having occurred (from fever) on his way home from Africa. Mr. Buchanan had recently sent a large collection of plants to the British Museum.

CAPE ALGÆ.

By Ethel S. Barton.

Since publishing the Provisional List of the Marine Algæ of the Cape of Good Hope in the *Journal of Botany* for 1893, much work has been done by collectors in that region. Many of these, notably Mr. Tyson, Miss Newdigate, Mr. Flanagan, Mr. Slavin, and Mr. Maurice Evans, have sent plants of interest to the British Museum, and Dr. Becker has also sent collections to the same Institution, to the late Prof. Schmitz of Greifswald, and to Mr. Holmes; so that the South African area bids fair to be well explored. I propose, therefore, to publish by degrees a revision of my previous Cape List, with the additions which have been made to the Flora since 1893, and to add critical notes to such species as appear of doubtful authenticity or require further investigation. In this revision I hope to have the assistance and co-operation of my friend Mrs. Weber van Bosse, who spent some months in South Africa in 1894, and brought back a collection of Algæ from various parts of the coast. The revision will contain as far as possible all fresh records of plants ranging from Walfisch Bay to Natal, and, later on, the coast-line will be divided up into areas determined by the temperature of the water, and these areas compared with each other and with other parts of the world. Our knowledge of the *Corallinæ* of South Africa is in the same unsatisfactory state as it has ever been, since it is impossible to work out this group at a distance from the growing plants. I must here record my grateful thanks to Major Reinbold for his never-failing kindness in sending me many specimens for comparison, and to Mr. Batters for advice and help on critical points. Species not included in my previous list are here printed in capitals.

PROTOPHYCEÆ.

LYNGBYA ÆSTUARII Liebman. Cape, *Harvey*!

L. MAJUSCULA Harv. Kei Mouth, *Flanagan*!

CALOTHRIX ÆRUGINEA Thur. Cape Morgan, *Flanagan*!

CHLOROPHYCEÆ.

ENTEROMORPHA RHACODES Holmes. Mouth of Kowie River, *Becker*!

Letterstedtia insignis Aresch. Port Elizabeth, *Weber van Bosse*! Port Alfred, *Slavin*! Kowie, *Becker*!

UROSPORA PENICILLIFORMIS Aresch. Kalk Bay, *Boodle*! on *Chætangium saccatum*.

Cladophora catenifera Kütz. (= *Conferva radiosa* Suhr). Algoa Bay, *Suhr*! Port Alfred, *Slavin*! Cape Morgan, *Danvers*!

UDOTEA DESFONTAINESII Dcne. Natal, *Evans*!

CAULERPA PLUMARIS Ag. Kowie River, *Tobias*! Cape Morgan, *Flanagan*!

C. BARTONIÆ Murr. British Kaffraria, *Flanagan*!

CODIUM BURSA Ag. Natal, *Evans*!

C. Lindenbergii Bind. Port Elizabeth, *Farquhar*! Cape Morgan, *Flanagan*! Kowie, *Becker*!

C. MUCRONATUM J. Ag. Sea Point, *Boodle*! *Weber van Bosse*! Cape, *Scott Elliot*!

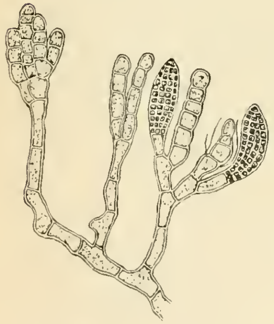
C. ADHÆRENS Ag. Knysna, *Newdigate*! Port Elizabeth, *Farquhar*! The specimens of this alga, which have been sent by Miss Newdigate, preserved in spirit, are only attached to the substratum at the centre of the thallus, and the rest of the flat frond is free, though prostrate. It was suggested to me that this was a new species of *Codium*, but since in the same sending I find plants in which the thallus entirely adheres to the substratum, I believe that all the specimens are but forms of *C. adhærens;* the more so that all of them exhibit the clavate exterior cells with the very long cylindrical filaments below, found in *C. adhærens.* Prof. J. G. Agardh, in his *Till Algernes Systematik*, pt. viii. p. 37, in speaking of this species, says, "lobis demum a rupibus plus minus solutis," showing that the unattached lobes in *C. adhærens* are not unknown.

PSEUDOCODIUM DEVRIESII Web. van Bosse, ined. Isipingo, Natal, *Weber van Bosse*! Kei Mouth, *Flanagan*!

PHÆOPHYCEÆ.

Haliseris ligulata Suhr. Port Alfred, *West*! Kowie, *Becker*!

STILOPHORA RHIZODES J. Ag. Hagahaga Mouth, *Flanagan*!



STREBLONEMA CODII, × 170.

Streblonema Codii, n. sp. Filis primariis repentibus, ramosis, usque ad 18 μ latis, intra cellulas hospitis profunde penetrantibus, articulos irregulares præbentibus. Filis secundariis erectis, circa et supra cellulas hospitis emergentibus, fasciculate ramosis, 8–10 μ latis, sporangiis plurilocularibus, pedicellatis, subcylindraceis, apice attenuatis, in media parte transverse 4-seriatim locellatis.

Hab. in thallo *Codii adhærentis* maculas magnas formantibus, ad Knysna, Cap. bon. Spei. Coll.: C. Newdigate.

This species appears to be rather uncommon, since of all the plants of *Codium adhærens* which I have seen from the Cape, *Streblonema Codii* grows on only a few, which were sent me by Miss Newdigate, of Forest Hall, Knysna. On these it grows in large, dark patches, spreading over the surface.

In some points *S. Codii* resembles M. Sauvageau's new genus *Strepsithalia*, but it differs from it in the number of transverse loculi of the plurilocular sporangia, *Strepsithalia* having uniseriate loculi, and this plant having four in the thickest part of the sporangium. A resemblance between *S. Codii* and *Ectocarpus* (*Streblonema*) *Stilophoræ* Crouan, var. *cæspitosa* Rosenv. has been pointed out, but the same difference in the plurilocular sporangia applies here as in the case of *Strepsithalia*.

ANISOCLADUS CONGESTUS Rke. (= *Sphacelaria paniculata* Hering in Herb., non Suhr). Cape, *fide Reinke.*

CHNOOSPORA FASTIGIATA J. Ag. Natal, *Evans*!

Carpomitra chytraphora Kütz. (= *Fucus minimus* Hering). Natal, *Krauss in Herb. Hering*!

PHYLLITIS FASCIA Kütz. Kaffraria, *Flanagan*!

FLORIDEÆ.

Ceramium Poeppigianum Grun. Cape, *Tyson*! On *Amphiroa Bowerbankii*, Isipingo, *Weber van Bosse*!

C. PROREPENS Grun. On *Amphiroa*, Durban, *com. Tyson*! Isipingo, *Weber van Bosse*!

C. diaphanum Roth. Walfisch Bay, *Hb. Tyson*!

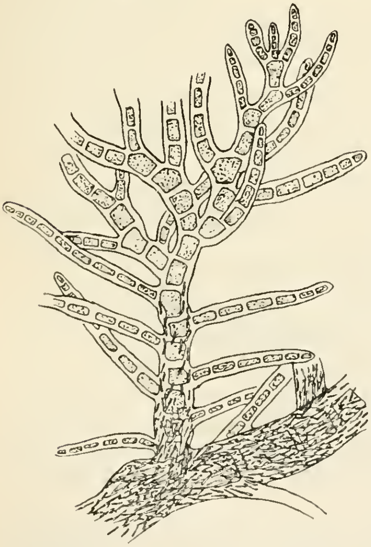
C. cancellatum Ag. Port Nolloth, *Nightingale*!

C. obsoletum Ag. Walfisch Bay, *Cleverly*! British Kaffraria, *Flanagan*!

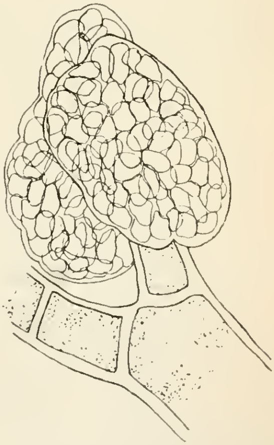
GRIFFITHSIA CORALLINA Ag. Cape Morgan, *Flanagan*!

Carpoblepharis flaccida Kütz. Walfisch Bay, *Cleverly*! Port Nolloth, *Nightingale*!

Halothamnion Harveyanum J. Ag. Muysenberg, *Harvey*! British Kaffraria, *Flanagan*!



PLEONOSPORIUM TYSONI, × 28.

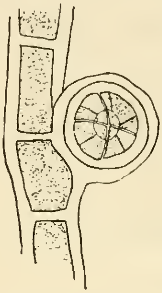


PLEONOSPORIUM TYSONI.
Cystocarp, × 170.

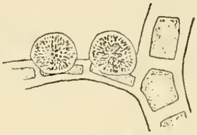
PLEONOSPORIUM TYSONI Barton (= *Aristothamnion Tysoni* Bart. in *Journ. Bot.* 1893, p. 204). Fronde nana, erectiuscula, circa 5 mm. alta, alterne decomposito-pinnata, ramis inferne quoquoversus egredientibus, superne distichis, ramulis superioribus sub-

corymbosis, ad apicem attenuatis, axi primario inferne plus minus corticato, cellulis 150–170 μ latis. Cellulis ramulorum inferne diametro 2–3plo longioribus, superne sensim brevioribus. Sphærosporangiis sporas plurimas continentibus, sessilibus, interiore latere pinnularum juxta basim secundatis. Cystocarpiis terminalibus, bilobatis, carposporis nullo ordine dispositis, foventibus. Antheridiis glomerulos hemisphæricos, sessiles in ramulis superioribus secundatim dispositis formantibus.

Hab. in thallo *Gigartinæ Radulæ* epiphyticum. Ad Cap. bon. Spei, a W. Tyson com.



PLEONOSPORIUM TYSONI.
Tetrasporangium, × 170.



PLEONOSPORIUM TYSONI.
Antheridia, × 170.

An examination of the cystocarp, which I had not seen at the time my list of Cape Algæ was published, has convinced me that the plant should be referred to the genus *Pleonosporium* rather than to *Aristothamnion*. In the above revised diagnosis I have been able to add several important points to my former description.

CRYPTONEMIA? CAPENSIS Schm. Port Alfred, *Carr*! *Slavin*!

GLAPHRYMENIA PORPHYROIDEA Schm. Cape, *Becker*!

Aeodes orbitosa Schm. (= *Iridæa orbitosa* Suhr). Cape, *Drege*! *Harvey*!

A. ULVOIDEA Schm. Natal coast, *Becker*!

Thamnoclonium natalense J. Ag. Kowie, *Becker*!

GIGARTINA CHONDRUS Aresch. Cape, *fide Grunow*.

Spyridia squalida J. Ag. Kowie, *Becker*!

S. cupressina Harv. Port Elizabeth, *Farquhar*! Kowie, *Becker*!

Thysanocladia africana Schm. (= *Gelidium serratum* Kütz.). Port Elizabeth, *Farquhar*! The plant recorded in my list as *T. coriacea* Harv. is *Ptilophora pinnatifida* J. Ag., under which name it is recorded below.

HYMENOCLADIA KALYMENIOIDES mihi (= *Microcœlia kalymenioides* Holmes). Port Alfred, *Slavin*! Kowie, *Becker*! Under this name I place the plant previously recorded as *H. polymorpha* J. Ag. Prof. Schmitz pointed out to me that it was a new species of *Hymenocladia*, but, before it was published, a plant was described by Mr. Holmes as *Microcœlia kalymenioides* in *Annals of Bot.* vol. viii. p. 339 (Sept. 1894). Mr. Holmes there states that it is the opinion of Prof. Schmitz that his plant belongs to *Hymenocladia*

kowiensis Schm. MS., and as through the kindness of Mr. Holmes I have been enabled to see the type specimen of *Microcœlia kalymenioides* and compare it with the plant of *Hymenocladia* in the British Museum on which Prof. Schmitz founded his opinion, I am compelled to differ from Mr. Holmes in his decision. It is possible that further material may enable me to agree in the distinctness of the two plants.

RHODYMENIA CAPENSIS J. Ag. Walfisch Bay, *Cleverly*! Port Alfred, *Slavin*! Kowie, *Becker*! *Flanagan*! Isipingo, *Weber van Bosse*!

Epymenia obtusa J. Ag. Walfisch Bay, *Cleverly*!

Plocamium rigidum Bory. Kowie, *Becker*!

P. glomeratum J. Ag. Table Bay, *Tyson*! False Bay, *Home*!

P. nobile J. Ag. Kowie, *Becker*! Natal, *Evans*!

Desmia tripinnata J. Ag. British Kaffraria, *Flanagan*! Natal, *Weber van Bosse*!

Rhodophyllis capensis Kütz. Cape Point, *Boodle*! False Bay, *McMillan*! British Kaffraria, *Danvers*! *Flanagan*!

Peyssonelia replicata Kütz. Kowie, *Becker*! Cape Morgan, *Danvers*!

P. majus Kütz. Knysna, *Newdigate*! Port Elizabeth, *Farquhar*! Port Alfred, *Crozier*! Kowie, *Becker*! Port Natal, *Gueinzius*!

P. squamaria Dcne. Natal, *Krauss*, *Gueinzius*. I have not seen a specimen of this plant from South Africa, and much doubt if these records are correct.

Tyleiophora Beckeri J. Ag. Algoa Bay, *West*! British Kaffraria, *Flanagan*! Kowie, *Tobias*!

PHACELOCARPUS EPIPOLÆUS Holmes. Port Alfred, *Slavin*! Kowie, *Becker*!

Gracilaria confervoides J. Ag. Table Bay, *Ross*!

Sarcodia capensis J. Ag. Kowie, *Becker*!

Calliblepharis fimbriata J. Ag. Kowie, *Tobias*! *Becker*!

Heringia mirabilis J. Ag. Kowie, *Becker*!

Holmesia capensis J. Ag. Port Alfred, *Slavin*! *Carr*! Kowie, *Becker*! Cape Morgan, *Flanagan*!

Nitophyllum platycarpum J. Ag. Port Nolloth, *Nightingale*!

N. venosum Harv. (= *N. capense* Harv. MS.). Walfisch Bay, *Cleverly*!

N. maculatum Sond. Kowie, *Becker*!

CALOGLOSSA LEPRIEURII Harv. Kei Mouth, *Flanagan*! Durban, *Weber van Bosse*!

Scinaia salicornioides J. Ag. Kowie, *Becker*! Cape Morgan, *Danvers*!

Chætangium ornatum J. Ag. Kei Mouth, *Flanagan*!

Ptilophora spissa J. Ag. Kei Mouth, *Flanagan*! This plant was wrongly recorded under *Polyphacum Smithiæ* Harv., which does not occur at the Cape, so far as is known.

Ptilophora pinnatifida J. Ag. Natal, *Ruperti*! Kowie, *Becker*! Prof. Schmitz pronounces this plant to be a species of *Gelidium*

(*Neue japanische Florideen in Hedwigia*, Bd. xxxiii. 1894). It is not the same as *Carpoblepharis pinnatifolia* (Suhr) Kütz., which Prof. Schmitz places in *Dasyopsis*. He thinks that the *Sphærococcus lucidus* Ag., Algoa Bay, *Ecklon* (*Flora*, 1834, p. 728), which was recorded under *Pterocladia lucida* J. Ag., p. 19 of my former list, is probably identical with this species.

HYPNEA FRUTICULOSA Kütz. Three Anchor Bay, *Tyson*! Kowie River, *Becker*!

H. Eckloni Suhr. Algoa Bay, *Suhr*! British Kaffraria, *Flanagan*! Kowie, *Becker*!

The record of *Eucheuma spinosum* J. Ag., False Bay, *McMillan*! on p. 20 must be omitted.

Corallopsis aculeatum Holmes (= *Gelidium aculeatum*, in *Ann. & Mag. Nat. Hist.* (1842), no. 91, and *Gigartina aculeata* Kütz. *Tab. Phyc.* vol. xviii. tab. vi.). Natal, *Becker*! *Weber van Bosse*!

Caulacanthus ustulatus Kütz. Port Nolloth, *Nightingale*!

Sarcomenia miniata J. Ag. Algoa Bay, *Hb. Suhr*! (sub nomine *Polysiphonia clathrata* Suhr). Cape Morgan, *Flanagan*!

Chondriopsis capensis (= *Laurencia laxa* Harv.). Walfisch Bay, *Cleverly*!

POLYSIPHONIA SERTULARIOIDES J. Ag. Port Elizabeth, *Farquhar*! British Kaffraria, *Flanagan*!

P. tenebrosa Harv. Table Bay, *Tyson*!

P. atrorubescens Grev. Table Bay, *Tyson*!

P. Heringii Harv. Knysna, *Newdigate*! British Kaffraria, *Flanagan*!

P. corymbifera Ag. Walfisch Bay, *Cleverly*! Cape Point, *Boodle*! Sea Point, *Tyson*!

Pachychæta griffithsioides Kütz. Kowie, *Becker*! Natal, *Ruperti*! on *Spyridia insignis*.

Dasyopsis pinnatifolia (Suhr) Schm. (= *Carpoblepharis pinnatifolia* Kütz.). Algoa Bay, *Ecklon*.

MELOBESIA THURETI Born. Cape, *Tyson*!

M. stelligera Endl. et Dies. (= *Mastophora hypoleuca* Harv.).

JANIA ROSEA Lamk. Natal, *Krauss*!

(To be continued.)

POLYGALÆ NOVÆ ELLIOTIANÆ

QUAS DESCRIPSIT DR. R. CHODAT.

P. Britteniana Chod. 3–4 dcm. longi. Radix perennis. Caules plures cylindrici, virgati, erecti, glaberrimi, subaphylli vel foliis erectis, linearibus vel acicularibus, 2 cm. longis, 1–1·25 mm. latis, setis paucis sparse pilosis, citius deciduis. Racemi elongati, ad 2 dcm., valde laxiflori, floribus internodiis sæpius multo breviori-

bus. Bracteæ subpersistentes, parvæ, ovato-acutæ, sericeæ, pedicello adpresse puberulo triplo vel quadruplo breviores. Pedicelli ad 4 mm. longi. Rachis racemi pilis adpressis puberula. Sepala duo anteriora haud concrescentia. Alæ suborbiculares vel late ellipticæ, 8–9 mm. longæ, 7·5 mm. latæ, nervis valde anastomosantibus, parce ciliatæ. Carinæ limbus breviter biauriculatus, crista magna valde incisa obtectus. Petala superiora subrhomboidalia irregulariter sinuata, quam carina fere duplo breviora. Ovarium pilosum; stylus vittiformis latus; stigmata obsoleta, inferius medio tuberculatum, superius margine serratum, sub apice transversaliter incrassatum. Capsula alis brevior at multo angustior, oblonga, leviter emarginata, ciliata. Semina oblonga, pilis adpressis sericea; caruncula in semine haud equitans sed eo superposita leviter triloba et obtuse conica, glabra.

In Africa centrali ad Stevenson Road, 4–5000 ped., *Scott Elliot*, Ruwenzori Exped., 8256.

Nomen in honorem cl. J. Britten datum.

Affinis *P. butyraceæ* Heck., differt caulibus minus robustis, glabris, petalis quam carina multo brevioribus, capsula angustiore et semine dense vestito habituque toto graciliore.

P. ruwenzoriensis Chod. Caules stricti, validi subtomentosi vel hirsuti; foliis lanceolatis, acutis, superne rugosis, utraque facie pilosis, ad 6 cm. longis, 12 mm. latis. Racemi floribundi, elongati, comosi, rachi tomentoso-hirsuta. Flores magni ad 13–15 mm. longi, pedicellis longiores. Bracteæ persistentes, longæ, lineares, longe acutæ, hispidæ. Alæ obovatæ, basi attenuatæ, nervis anastomosantibus, subglabræ vel ciliatæ, pulchre roseæ. Figura florum *P. Gomesianæ* simillima. Petalorum limbus breviter linearis, obtusus, basi in unguem subtriangularem dilatatus. Ovarium valde pilosum.

In Africa centrali ad Mubuku Valley, ad 5000 ped., *Scott Elliot*, Ruwenzori Exped., No. 7543.

A *P. Gomesiana* Welw. differt indumento, bracteis magis elongatis, ovario prorsum ciliato, foliis apiculatis.

P. Elliotii Chod. Folia lanceolato-elliptica, ad 2 cm. longa et 8 mm. lata vel majora, apiculata, *basi distincte petiolata*. Racemi floribundi, validi. Bracteæ lineares patulæ ad 8 mm. longæ. Pedicelli longissimi sub fructu ad 14 mm. longi. Sepala dorso ciliata. Alæ ad 16 mm. longæ late obovatæ.

Affinis *P. Gomesianæ*, differt bracteis longis, *subscariosis*, foliis apiculatis, seminibus et capsula oblongis, a *P. ruwenzorica* Chod. floribus majoribus, bracteis scariosis, pedicellis multo longioribus, foliis haud lanceolatis.

Tanganika, west slope, Kiriba, *Scott Elliot*, No. 8237.

P. Bakeriana Chod. Caules erecti, sublignescentes, subvalidi, stricti, ramis erectis strictis, parce hispidis, foliis linearibus, breviter acutis vel obtusis, marginibus in sicco revolutis, ad 5 cm. longis et 5 mm. latis, plerumque minoribus. Flores racemosi, conspicue pedicellati. Rachis racemi parum hispida, striata. Bracteæ persistentes ovato-acutæ, pedicellis multo breviores. Sepala parce hispida. Alæ late obovatæ, dorso ciliatæ, nervis anastomosantibus, ad 7 mm. longæ. Petala superiora, limbo late lineari, obtuso, cum unguiculo subtriangulari geniculato. Crista penicillata. Ovarium pilosum; stylus et stigmata ut in *P. persicariifolia* DC.

Affinis *P. butyraceæ* Heck., differt caulibus ramisque strictis, hispidis, floribus et fructubus minoribus, floribus in sicco fuscescentibus habituque toto. Petalis superioribus, pistillo, *P. Gomesianæ* affinis, differt autem floribus multo minoribus habituque toto.

In Africa centrali, Urundi, *Scott Elliot*, Ruwenzori Exped., No. 8252.

Nomen in honorem cl. E. G. Baker datum.

P. alata Chod. Caules virgati, cylindrici, superne fastigiate ramosi, subaphylli (an foliis deciduis?). Racemi elongati, laxiflori, floribus internodiis haud brevioribus. Bracteæ deciduæ, lanceolato-lineares, acutæ, mediana aliis longior. Pedicelli glaberrimi ad 3 mm. longi. Flores 5–6 mm. longi. Alæ ellipticæ, subacutæ, nervis 3, lateralibus extrinsecus ramosis, cum mediano vix anastomosantibus, corollam $\frac{1}{3}$–$\frac{1}{4}$ superantes. Corollæ *pars superior deflexa*, crista ad petala superiora pendente. Petala superiora ejusdem formæ ut *P. abyssinicæ* Fres., carina duplo fere brevior. Crista profunde incisa, lobis linearibus, apice breviter bifidis. Pistillum ut in *P. abyssinica*. Capsula cuneata vix emarginata, angustissime alata. Semina oblonga. Arillus trilobus carinatus, appendicibus ventralibus alia $\frac{1}{3}$ brevioribus haud membranacee dilatatis.

In Africa centrali, Elment, 5–7000 ped., *Scott Elliot*, Ruwenzori Exped., No. 6689.

P. abyssinicæ valde affinis, differt carina quam alæ multo breviore, caulibus subaphyllis aliisque notis.

P. polygoniflora Chod. Folia oblonga, vel oblonge-anguste obovata, acuta, pilis sublongis ciliata, suberecta. Racemi supra-axillares erecti pauciflori. Flores penduli, albicantes, breviter pedicellati. Sepala medio late viridescentia, ciliata. Alæ late ellipticæ, subacutæ, nervis parce anastomosantibus. Crista penicillata, conspicua. Carinæ limbus basi ciliatus. Petala superiora et pistillum ut in *P. Sadebeckiana* Gürke. Capsula late transversim elliptica, sublate marginata valde ciliata. Semina breviter ovata, breviter hirsuta; caruncula triloba equitans lobis subinæqualibus mediano longiore, apice haud spathulate dilatatis.

In Africa centralis, *Scott Elliot* Ruwenzori Exped., No. 8670.

Affinis *P. Sadebeckianæ* Gürke, differt alis latioribus, albis, capsula marginibus latioribus, seminum caruncula, seminibus breviter hispidis nec pilis adpressis sericeis, appendicibus apice haud rotundatis, foliis acutis et floribus minoribus.

JUNCUS TENUIS Willd. IN NORTH WALES.

By J. Lloyd Williams.

Mr. Arthur Bennett (*Journ. Bot.* 1895, 39) raises the interesting question whether *Juncus tenuis* is a recent introduction. He draws attention to the British and foreign records given, and the plants said to be associated with it, and invites further details respecting these points. A fuller description of the Portmadoc locality, where the plant was found by the Rev. W. H. Painter and the writer (*Journ. Bot.* 1891, 120), and of two new localities in the same district, may assist in throwing light on this question.

The Traeth Mawr is a flat valley extending inland for about six miles. The river forming the boundary between Carnarvon and Merioneth runs through it. As late as the close of last century it was partly covered by the sea. *Asplenium marinum* grows even now on some rocks at the very head of the valley above the road from Beddgelert to Tanybwlch, while *Armeria vulgaris*, *Silene maritima*, *Asplenium lanceolatum*, and other littoral plants are found in various places round the valley and on the islet-like rocks rising out of it. All this shows that at a comparatively recent period the whole valley must have been a land-locked bay. About the beginning of the century the Portmadoc embankment was built and the land reclaimed, with the exception of a small portion just within the embankment, which is always covered by a varying amount of brackish water. Near this, such plants as *Carex Œderi*, *C. extensa*, *Triglochin*, &c., grow, while the remainder of the land as far as the railway running parallel with the embankment is almost entirely occupied by a very rough pasture full of gorse and tufts of *Juncus communis*, *J. maritimus*, &c. The soil is sandy, but not marshy. *Juncus tenuis* is confined to the cattle tracks which intersect this portion, and it extends along several of them for twenty or forty yards. I failed to find it in the wetter parts near the water or in the better land on the other side of the railway. On subsequent visits with botanical friends, we had some difficulty in finding the plant again. The part where it used to flourish best had been railed-off from the cattle, the tracks had become overgrown with herbage, and the *Juncus* had nearly all disappeared. We, however, found it growing plentifully in the new tracks which had been made by the cattle.

Last summer, as Mr. D. A. Jones, of Harlech, and I were crossing the Traeth along a grassy footpath opposite the village of Prenteg, about two miles further inland than the above locality, we came upon a fairly large number of fine tufts of the rush. It is a noteworthy fact that the only portion of the footpath occupied by the plant was a part along which cattle were in the habit of passing to and from a farmyard. Here again we were on reclaimed land, and the soil was sandy and not wet. Soon after this, Mr. Jones sent me specimens from above Harlech, in the county of Merioneth, a few miles to the S.E. of Portmadoc. The following is his description of the locality:—"The plant grew about 2¼ miles above

Harlech, and 3 miles from the sea, along a disused bye-road connecting the Harlech and Dinas roads. The locality is hilly, the altitude being about 600 ft. above sea-level. The rush is found in isolated tufts in the beaten track running along the middle of the road. In no case did I find any plants along the sides of the road or in the neighbouring fields. The soil is loamy. It flourishes well on an exposed part of the road, thirty to forty yards long, where the soil is dry and thin. It attains a larger size in the more moist parts of the road, but the tufts are fewer in number." These habitats bear a curious and striking resemblance to those described by Mr. Scully (*Journ. Bot.* 1887, 335). In one case he says that the plant grew "within a few yards of the sea, and quite near such maritime plants as *C. distans*, *C. extensa*, *J. Gerardi;* the latter were within tidal influence, while *J. tenuis* was just outside its reach." This would exactly apply to the Portmadoc locality, while the other habitat bears an equally striking resemblance to the Harlech one, both being old grassy hill-roads.

The conclusions that seem to present themselves from a study of the Portmadoc and Prenteg localities are—

1. That here at least the plant is undoubtedly a recent introduction. It may of course have spread from a neighbouring locality; when, however, we consider that indigenous plants which are rare are generally in process of dying out, it seems far more probable that a plant which spreads so readily as *J. tenuis* seems to do is a recent introduction from a foreign country.

2. Its strikingly erratic distribution and its disappearance as soon as the grass is allowed to grow freely about it lend colour to the view that it is not a native.

3. The partiality of the plant for cattle-paths suggests that cattle may be the means of distributing the seeds. The plant is very probably a native of N. America. May not the seeds have been carried over with cargoes of corn? If so, we can easily understand their becoming attached to the feet of cattle. Those that happened to have dropped off in fairly open places would succeed in growing, while such as were left in the thick pasture would be stifled by the herbage, or remain dormant until the grass happened to be sufficiently trodden down to give them a chance of growing.

A study of the distribution of *J. tenuis* in other parts of the world seems to confirm the view that it is a foreign introduction in this country. As shown by Mr. Bennett, continental botanists are much divided on this question. This uncertainty is in itself an argument in favour of its not being indigenous. Buchenau, in his monograph of the *Juncaceæ* (*Engl. Bot. Jahrb.* 1890, 193) says that in Middle Europe it was formerly only known from a few localities, but that within the last decade it has considerably extended itself. These remarks are certainly significant.

The distribution of the plant in America is strikingly different from the above—

1. It is one of the most common and best known, ranging from the Peace River through Mexico and the W. Indies to S. America

as far as Argentina, and across the continent from Newfoundland to Vancouver Island.

2. As already pointed out by Mr. Bennett, its habitats are more various than the European ones. The following are a few quoted from American floras, or from specimens in the British Museum or Kew Herbaria:—"Low grounds," "roadsides," "meadows and damp pastures," "boggy pastures," "old roads in woods," "ditches and river-sides," &c.

3. The following records of altitude show that, after making allowance for difference of latitude, it has a greater vertical range there than in Europe:—Colorado, hot springs, 5500 ft. (*Jones*, spec. in Brit. Mus.). Black Hills, Dakota, 3500 ft. (*Rynberg*, spec. in Kew Herb.). San Luis Potosi (22° N. lat.), 6000–8000 ft. (*Parry & Palmer*, spec. in Kew Herb.). S. Mexico, 7500 ft. (*Biol. Centr. Amer.* Bot. iii. 399).

4. The most striking fact of all is the great variability of the plant in America. Engelmann (*Bot. Works*, 251) shows that this variability is exemplified "in the size of the plant (from a few inches to two feet), in the size and fulness of the inflorescence, and in the size and development of the one, two, or even three spathes." This author describes two varieties, viz., *secundus* and *congestus*. Watson (*Geol. Survey Calif. Bot.* ii.) states that the latter var. is the prevalent form of the plant on the Californian coast. In addition to these, a third var. (*platycaulos* Fr. B.) is described from S. America. All the above observations seem to point out America—probably N. America—as the home of *J. tenuis*, and the great difference between its mode of distribution there and in Europe strengthen the conviction that in the latter continent it is a recent arrival.

In 1878 Cheeseman recorded the plant from New Zealand (*Trans. New Zeal. Inst.* ii. 433). He says the plant was "abundant in some marshy ground not far from the bank of the river, but, curiously enough, during the hurried examination I was able to make of the Wairoa district I did not observe it either higher up or lower down the river, although suitable localities are sufficiently abundant." In the same note the author seems inclined to accept the plant as indigenous, but in a subsequent paper on the naturalized plants of Auckland (*Trans. N. Z. Inst.* xvii. 293) he gives five localities, and adds, "I am now inclined to consider the species as an importation (Europe)." It may be added that *J. involucratus* T. Kirk (*Trans. N. Z. Inst.* 1877, 550), from South Island, has been reduced by Buchenau to *J. tenuis*.

In the *Botany of the Challenger*, 154, a rush brought from Tristan-da-Cunha, the specimens of which were imperfect and which had been collected in boggy pastures, is named *J. tristanianus* Hemsley, and regarded as endemic. This also is said by Buchenau to be nothing more than *J. tenuis*. If this is correct (and botanists who see the specimen in the Kew Herbarium will probably agree with the reduction), the interesting question arises whether the plant is a recent introduction here also. We know that *Cerastium triviale*, *Oxalis corniculata*, *Senecio vulgaris*, *Rumex Acetosella*, and several others, have succeeded in establishing themselves on the island, and the introduction of cattle and importation of foreign seeds would naturally add to their number. More precise observations on this point will be awaited with interest.

Returning to our own country, it would be instructive to observe carefully whether the plant tends to extend itself or to die out in the localities where it has already been recorded. If ultimately it can be proved that it is an introduction, it might be very interesting to notice whether it tends to vary in our country as it does in America. The diagnoses given by Engler of the two most distinct N. American forms are appended. This is done not with the object of lengthening our catalogue of British plants, but to accumulate records of varying forms which may eventually guide us to a better understanding of the laws of variation.

J. TENUIS Willd.

Var. β. *secundus* Engelm. ramis paniculæ spatham excedentibus erectis incurvis; floribus minoribus secundus.—*J. secundus* Poir.

Var. γ. *congestus* Engelm. ramis paniculæ quam spatha brevioribus abbreviatis; floribus fere in capitulum congestis; sepalis fusco-striatis; capsula e stramineo fusca.

LICHENES ANTILLARUM A W. R. ELLIOTT COLLECTI.

EXPONIT EDV. A. WAINIO.

(Continued from p. 107.)

Trib. 11. CŒNOGONIEÆ.

1. CŒNOGONIUM.

1. C. LINKII Ehrenb.; Wain. Étud. Brés. ii. 64. Ad ramulos arborum in monte St. Andrews (2000 ped. s. m.) in St. Vincent (n. 29). Fertile.

2. C. LEPRIEURII (Mont.) Nyl.; Wain. *l. c.* 65. Ad corticem arborum in Richmond Valley in St. Vincent (n. 230 pr. p.). Fertile.

Var. PANNIFORME Wain. Thallus pannose expansus, adnatus aut ambitu anguste liber. Apothecia in latere superiore sita. Ad corticem arborum in Richmond Valley in St. Vincent (n. 230 pr. p.). Cum *C. interplexo* Nyl., Quelq. Obs. Cœnog. 92, analogum, at in *C. Leprieurii* transiens et cum eo crescens. Thallus flavescens aut viridis aut stramineus, plagas ambitu partim rotundatas formans. Gonidia 0·012–0·014 millim. crassa. Fertile.

Trib. 12. GYALECTEÆ.

1. GYALECTA.

1. G. LUTEA (Dicks.) Tuck. Ad corticem arboris in Roseau Valley in Dominica.

2. G. MICROSPORA (Müll. Arg.) Wain. Ad folia arborum in Dominica et in Bonhomme Woods in St. Vincent. Excipulum

pseudo-parenchymaticum. Hymenium 0·030–0·025 millim. crassum, iodo leviter violascens (in specimine e Dominica primum dilutissime cærulescens). Paraphyses laxe cohærentes, apice capitatæ. Asci anguste clavati. Sporæ 8næ, distichæ, 1-septatæ, long. 0·005–0·0085, crass. 0·0015–0·002 millim. Apothecia cupularia, habitu sicut in *G. diluta*, aut plana (in specimine e St. Vincent). Excipulo parenchymatico a *G. perminuta* Wain., *l. c.* 72, differt. Sit *Biatorinopsis microspora* Müll. Arg. Lich. Beitr. n. 259.

3. **G. Vincentina**, sp. n. Thallus tenuissimus, lævigatus, argillaceo-cinerascens, continuus. Apothecia 0·7–0·3 millim. lata, elevata, adpressa, depresso-convexa, immarginata, pallida. Excipulum sat minute pseudo-parenchymaticum, gonidiis destitutum. Hypothecium albidum. Hymenium 0·055–0·060 millim. crassum, iodo leviter cærulescens, dein mox sat leviter violacee vinose rubens. Epithecium albidum. Asci subcylindrici aut cylindrico-clavati. Paraphyses pr. p. apice bene capitatæ, pr. p. apice vix incrassatæ, laxe cohærentes. Sporæ 8næ, fusiformes aut oblongæ, 1-septatæ, long. 0·005–0·007 millim., crass. 0·0015 millim., distichæ, rectæ, decolores, apicibus obtusis aut acutis. Ad folia arboris in Bonhomme Woods in St. Vincent (cum n. 351). Thallus gonidia phycopeltidea continens ad paginam inferiorem foliorum et apothecia ad marginem foraminum in pagina superiore foliorum crescunt.

Trib. 13. ECTOLECHIEÆ.

Thallus crustaceus, homœomericus, tenuis, strato corticali destitutus, hyphis leptodermaticis, crebre contextis. Gonidia protococcoidea. Apothecia thallo immersa, orbicularia, tenuia, plana. Perithecium proprium nullum aut tenue lateraleque. Paraphyses evolutæ, plus minusve ramoso-connexæ aut simplices. Sporæ oblongæ aut fusiformes, pluriseptatæ aut murales, decolores. Vulgo foliicolæ. Species huc pertinentes habitu sat similes sunt, quamquam sæpe analogias cum *Chiodectone*, *Arthonia*, *Lopadio*, et *Lecania* ostendunt et inter hæc genera intermediæ sunt. Ad hunc tribum pertinent: gen. *Ectolechia* Trev. (Saggio Class. Lich. 1853, 249) et ejus sectiones *Gonothecium* Wain. (Étud. Brés. ii. 29) atque *Gyalectidium* (Müll. Arg.) Wain., gen. *Asterothyrium* Müll. Arg. (Lich. Epiphyll. 12), gen. *Lopadiopsis* Wain. (ad quam *Myxodictyon coffeæ* Müll. Arg. *l. c.* 4, pertinet, paraphysibus simplicibus cet. ab *Ectolechia* differens), gen. *Lecaniella* Wain. (ad quam *L. hymenocarpa* Wain. Étud. Brés. i. 74, sporis septatis, apotheciis membranaceis, strato gonidiifero thallino infra apothecia hypotheciumve evoluto dignota, pertinet), gen. *Arthotheliopsis* Wain. Anne etiam *Secoligella* Müll. Arg. et *Calenia* Müll. Arg. (*l. c.* 3) pr. p. huc pertineant, e discriptione haud satis elucet.

1. ARTHOTHELIOPSIS.

1. **A. hymenocarpoides**, sp. n. Thallus crustaceus, tenuissimus, lævigatus, maculas continuas formans, glauco-virescens. Apothecia thallo immersa, 0·6–0·3 millim. lata, membranacea et habitu arthonioidea, disco plano aut levissime convexiusculo, olivaceo-pallido aut olivaceo-nigricante, immarginata, thallum fere

æquantia, lamina basin versus angustata. Hypothecium albidum, strato gonidiifero thallino impositum. Hymenium 0·065–0·055 millim. crassum, iodo non reagens, gonidiis hymenialibus destitutum. Paraphyses numerosæ, crebræ, simplices et pro parte parcissime ramoso-connexæ. Epithecium dilute pallescens, KHO dilute rubescens. Sporæ 8næ, decolores, polystichæ, fusiformi-ellipsoideæ, apicibus obtusis, long. 0·017–0·013, crass. 0·007–0·006 millim., murales, cellulis paucis, septis transversalibus 3, loculis intermediis longitrorsum semel divisis. Ad folia arboris in Bonhomme Woods in St. Vincent (cum n. 351). Habitu similis est *Lecaniellæ hymenocarpæ* Wain. (Étud. Brés. i. 74), cui certe proxime est affinis, at sporis muralibus et reactione hymenii ab ea differens. Gonidia protococcoidea. Excipulum laterale tenue, ex hyphis cum paraphysibus parallelis aut magis radiantibus formatum, sensim in thallum dilatatum. Asci ventricosi aut clavati, solum metaplasma ascorum iodo vinose rubens. Genus *Arthotheliopsis* Wain. apotheciis membranaceis, perithecio laterali superne haud connivente, hypothecio strato gonidiifero imposito ab *Ectolechia* differt.

2. ECTOLECHIA.

1. E. (Sect. GYALECTIDIUM) FILICINA (Müll. Arg.) Wain. *Gyalectidium filicinum* Müll. Arg. Lich. Beitr. n. 253; Lich. Epiphyll. Spruc. 323. Ad folia filicis in Morne Cochon (1200 ped. s. m.) in St. Vincent. Apothecia lamina basin versus dilatata. Hypothecium pallidum aut albidum, nullo strato gonidiifero impositum. Perithecium proprium laterale nullum distinctum; excipulum thallodes leviter elevatum, extus sensim in thallum abiens. Hymenium 0·035–0·025 millim. crassum, iodo non reagens, metaplasmate ascorum vinose rubente. Epithecium pallidum. Paraphyses numerosissimæ, ramoso-connexæ. Sporæ solitariæ, oblongæ, apicibus rotundatis, murales, cellulis numerosis, long. 0·028–0·036, crass. 0·012 millim. Gonidia protococcoidea. Gonidia hymenialia nulla.

Trib. 14. DIPLOSCHISTEÆ.

1. DIPLOSCHISTES.

1. D. ACTINOSTOMA (Pers.) Zahlbr., Hedwigia, 1892, 34; Garov. Thelops. Limbor. 8, tab. ii. figs. 1, 2.

Var. DEUTERIOIDES Wain. Thallus neque KHO nec $CaCl_2O_2$ reagens, medulla iodo cærulescens. Perithecium basi demum apertum deficiensque, latere fuligineum. Hypothecium albidum. Hymenium et epithecium decoloratum, iodo non reagens. Paraphyses crebre confertæ, sat laxe cohærentes, haud ramosæ, apice levissime incrassatæ. Gonidia protococcoidea. Ad Boery River in Dominica (n. 153). Hypothecio albo differt ab *Urceolaria deuteria* Nyl. (Fl. 1886, 321), quæ hypothecio fuscescente tenui describitur et forsan item est variatio *D. actinostomatis*.

Trib. 15. THELOTREMEÆ.

1. THELOTREMA.

1. **T.** (LEPTOTREMA) **microglænoides**, sp. n. Thallus sat tenuis, continuus, leviter minuteque verruculoso-inæqualis, albidus aut

partim glaucescenti-albidus, nitidiusculus. Excipulum verruculam fere hemisphæricam, 0·6–0·5 millim. latam, basin versus sensim dilatatam, formans, ostiolo minutissimo (solum lente visibili), punctiformi, rotundato, margine ostiolari integro. Apothecia sat crebra. Perithecium tenuissimum, pallidum, latere basin versus iodo cærulescens, columella nulla. Paraphyses gelatinam abundantem in KHO turgescentem laxamque percurrentes, haud ramosæ. Sporæ singulæ aut rarius binæ, demum fuscescentes, murales, cellulis numerosissimis, oblongæ, apicibus obtusis, long. circ. 0·120, crass. 0·034 millim. Ad corticem arboris in Richmond Valley in St. Vincent (cum. n. 266) parce lectum. *T. monosporo* Nyl. subsimile et cum eo affine, at verrucula excipuli paullo magis elevata, ostiolo minore et perithecio pallido ab eo differens. Sporæ iodo haud reagentes.

2. **T.** (Leptotrema) **lævius**, sp. n. Thallus crassitudine mediocris, æqualis lævigatusque, nitidiusculus, stramineo-glaucescens. Apothecia sat crebra, thallo immersa aut verruculas leviter elevatas irregulares plus minusve distinctas formantia, ostiolo parvo, punctiformi, rotundato, margine osteolari integro, thallo concolore aut paullo obscuriore. Perithecium pallidum, columella nulla. Sporæ 8næ, oblongæ aut ellipsoideæ, apicibus rotundatis, distichæ, murales, cellulis numerosis, septis transversalibus circ. 7–9, longitudinalibus circ. 2–3, fuscescentes, long. 0·025–0·030 millim., crass. 0·010–0·013 millim. Ad corticem arboris in insula St. Vincenti. Habitu subsimile *T. terebrato* Ach., at affine *T. trypaneoidi* Nyl., quod apotheciis obturatis (columella instructis) et thallo tenuiore ab eo differt.

3. **T.** (Brassia) **Elliottii**, sp. n. Thallus crassitudine mediocris aut sat tenuis, sat lævigatus, glaucescens, nitidiusculus. Apothecia sat crebra aut sparsa. Excipulum verrucam hemisphæricam, 1·5 millim. latam, basin versus sensim dilatatam, formans, ostiolo parvo, punctiformi, rotundato, margine ostiolari integro, sæpe paullo pallidiore. Perithecium fuligineum, dimidiatum, latere basin versus attenuatum, basi deficiens, columella centrali fuliginea, late conoidea, apice acuta. Sporæ solitariæ, oblongæ, decolores, murales, maximæ, long. circ. 0·340, crass. 0·045 millim., iodo violaceo-cærulescentes, cellulis numerosissimis. Ad corticem arborum in Richmond Valley in St. Vincent (n. 246 pr. p.). *T. piperis* Wain. Étud. Brés. ii. 78, huic speciei proxime est affine, at thallo glaucescenti-albido, apotheciis pr. p. minoribus et sporis minoribus ab eo differt. Analogum est *Ascidium postpositum* Nyl. Prodr. Nov.-Granat. Addit. 320 (subg. *Leptotrema*).

4. **T.** (Brassia) **homopastoides**, sp. n. Thallus crassitudine mediocris aut sat tenuis, sat lævigatus, glaucescens aut glauco-pallescens, nitidiusculus, effusus, hypothallo albido partim limitatus. Apothecia sat crebra, thallo immersa aut rarius verruculas minutulas parum elevatas formantia, ostiolo minutissimo, punctiformi, rotundato, margine ostiolari integro, thallo concolore aut angustissime fuscescente, thallum æquante aut leviter elevato aut impresso. Perithecium pallidum, columella nulla. Sporæ 8næ,

decolores, ellipsoideæ aut oblongæ, apicibus rotundatis aut obtusis, murales, long. 0·020–0·025, crass. 0·010 millim., iodo non reagentes, cellulis sat numerosis, septis transversalibus 7–6, longitudinalibus circ. 2–3. Ad corticem arborum in Richmond Valley in St. Vincent (n. 244). *T. homopastum* Nyl. in memoriam revocans, at magis affine *T. glaucopallenti* Nyl. (Prodr. Nov.-Granat. 327), quod septis transversalibus 6 sporarum ab ea differt.

5. T. (Ocellularia) dominense (Fée) Tuck. Syn. North Am. Lich. i. 225. *Ascidium* Nyl. Prodr. Nov.-Granat. 335; Krempelh. Die Flechten-Gatt. Ascid. 10. *Ocellularia* Müll. Arg. Lich. Beitr. n. 1177.

Var. fecundum Wain. Sporæ 4næ aut binæ aut singulæ. Ad corticem arboris in Richmond Valley in St. Vincent. Thallus continuus verruculoso-inæqualis, glaucescens, nitidiusculus, sat tenuis. Apothecia increbra, verrucas 1·5–2 millim. latas, hemisphæricas, demum basi abruptas formantia. Amphithecium intus dilute fulvescens aut flavescens aut partim albidum, KHO non reagens, extus substratum corticale KHO fuscescens. Perithecium fusco-fuligineum, sursum incrassatum, basi angustissime fuscescens. Sporæ decolores aut morbosæ obscuratæ, long. circ. 0·200, crass. 0·022 millim., septis transversalibus 24 aut pluribus, cellulis lenticularibus. In var. *xanthostroma* Nyl. Prodr. Nov.-Granat. 335, Krempelh. *l. c.*, transire videtur.

6. T. (Ocellularia) rhodostroma (Mont.) Wain. *Ascidium* Mont. Ann. Sc. Nat. 3 sér. Bot. xvi. 75, tab. 16, fig. 4; Syll. 364; Nyl. Prod. Nov.-Granat. ed. 2, 335; Krempelh. Die Flechten-Gatt. Ascid. 10. Ad corticem arborum in Roseau Valley (n. 123) et in Morne Anglais (n. 521) in Dominica. Thallus verruculosus et verrucosus aut æqualis et lævigatus. Verrucæ apotheciorum materiam roseam, KHO solutionem smaragdulam effundentem, continentia. Sporæ solitariæ, decolores, long. circ. 0·160–0·280, crass. 0·030–0·040 millim., iodo violascentes. Perithecium fuscescens aut fusco-fuligineum, sursum incrassatum, basi deficiens. Hypothecium albidum, columella nulla.

7. **T.** (Ocellularia) **excavatum**, sp. n. Thallus crassitudine mediocris, continuus, leviter verruculoso-inæqualis, stramineo-glaucescens, nitidiusculus. Apothecia crebra, thallo immersa aut verruculas parum elevatas circ. 0·5–0·6 millim. latas depressas demum formantia, ostiolo sat parvo, circ. 0·15–0·2 millim. lato aut minore, rotundato, margine osteolari integro, thallo concolore. Perithecium superne pallidum, tenue, basi deficiens, columella centrali, apice nigricante. Sporæ 8næ aut rarius pr. p. 4næ, decolores, 6–9-septatæ, long. 0·018–0·040, crass. 0·007–0·014 millim., iodo violascentes. Ad corticem arboris in monte St. Andrews (2000 ped. s. m.) in St. Vincent (n. 153). Verruculæ apotheciorum parum distinctæ, pr. p. apice demum impressæ. Sporæ vulgo altero apice rotundato, altero obtuso. A *T. cavato* Ach. verrucis apotheciorum haud aut parum evolutis et a *T. exiguo* (Müll. Arg. Lich. Exot. i. 284) colore perithecii differt.

Var. impressulum Wain. Thallus lævigatus, æqualis. Apothecia thallo immersa, verrucas nullas formantia, margine ostiolari impresso. Sporæ 6–8-septatæ (raro 5-septatæ), long. 0·028–0·038, crass. 0·010–0·011 millim. Ad corticem arboris in Morne Couronne in Dominica (n. 169). Perithecium laterale sordide pallidum, columella centrali pallida, apice fusco-nigra. Sporæ 8næ, oblongæ, apicibus rotundatis, decolores, iodo violascentes.

8. T. (Ocellularia) albidum Nyl. Lich. Nov.-Granat. ed. 2, 328. Ad corticem arboris in Richmond Valley in St. Vincent (n. 271). Thallus inæqualis, opacus, albidus, sat tenuis, materia cretacea. Apothecia aperta, crebra, disco cæsio-pruinoso, 0·2–1 millim. lato, impresso, thallum haud æquante, demum anguloso vel irregulari, margine ostiolari albo, irregulariter fisso verruculosove, demum plus minusve reflexo. Perithecium pallidum, tenue, columella nulla. Sporæ 8næ, decolores, altero apice rotundato aut raro obtuso, altero obtuso aut rarius acuto, vulgo 6–9-septatæ, rarius 3–11-septatæ, iodo non reagentes, long. 0·015–0·030, crass. 0·005–0·006 millim.

9. **T.** (Ocellularia) **vagum,** sp. n. Thallus crassitudine mediocris, sat æqualis, cinerascens aut glaucescenti-cinereus, nitidiusculus. Apothecia crebra vel creberrima, pro parte etiam confluentia, verrucas 0·6–0·7 millim. latas, hemisphæricas, basin versus dilatatas aut sat abruptas formans, ostiolo sat parvo, circ. 0·2–0·15 millim. lato, recte aut oblique disposito, rotundato, margine ostiolari sæpe albido, integro. Perithecium superne fusco-fuligineum aut fuscescens, latere pallidum, basi deficiens, columella centrali fuscescente. Sporæ 8næ, decolores et demum dilute pallidæ, altero apice rotundato, altero obtuso, 3–5-septatæ, iodo cærulescentes, long. 0·013–0·017, crass. 0·0055–0·007 millim. Ad corticem arboris in Richmond Peak (1000 ped. s. m.) in St. Vincent (n. 260). Ad species inter *Phæotremata* et *Ocellularias* intermedias pertinet, sporis demum dilute pallidis. Comparabile cum *T. calvescente* Fée et *T. meiospermo* Nyl. Habitu *T. obturatum* Ach. in memoriam revocat.

Trib. 16. PILOCARPEÆ.

1. PILOCARPON.

1. P. leucoblepharum (Nyl.) Wain. Étud. Brés. ii. 89; Reinke, Abh. Flecht. iv. 149. *Bilimbia leucoblephara* Arn. Lich. Jur. 180. *Lecidea* Hue, Addend. 176.

Var. poichilum Wain. Thallus crustaceus, tenuis, leviter subverrucoso-inæqualis, areolis majoribus minoribusve, albidis aut glaucescenti-albidis, KHO dilute lutescentibus, $CaCl_2O_2$ haud reagentibus, crebre contextis, supra hypothallum nigricantem aut passim cinerascentem, crebre contextum, dispersis. Apothecia adpressa, 0·6–0·3 millim. lata, disco plano, nigro, nudo, margine tenui, tomentoso, albido. Hypothecium fusco-nigricans, ex hyphis conglutinatis formatum, ceterum excipulum albidum et ex hyphis laxissime contextis constans. Hymenium circ. 0·040 millim. crassum, iodo persistenter cærulescens (demum obscuratum). Epithecium cæruleo-nigricans, KHO cæruleo-virescens. Paraphyses parcæ, parce ramoso-connexæ. Sporæ 8næ, oblongæ, long. 0·010–

0·018, crass. 0·003 millim., 3-septatæ, apicibus rotundatis aut obtusis. Ad corticem arboris prope Lomond Bay in St. Vincent (cum n. 152). Præsertim hypothallo magis evoluto a *P. leucoblepharo* (Nyl.) Wain. differt, et forsan est ejus varietas. Gonidia globosa, diam. 0·006–0·004 millim., protococcacea (solum simplicia visa). Ad genus *Pilocarpon* secundum descriptiones etiam species sequentes pertinent: *P. rotuliforme* (Müll. Arg. Lich. Beitr. n. 290; Lich. Epiph. 8), *P. polychromum* (Müll. Arg. Lich. Epiph. 8), *P. aterulum* (Müll. Arg. *l. c.*), *P. tomentosum* (Müll. Arg. Lich. Beitr. n. 1522). *Pilocarpon* et *Lecanactis* (Wain. Étud. Brés. ii. 90), sicut etiam *Roccelleæ*, quæ sporis, paraphysibus et colore excipuli *Graphideas* in memoriam revocant, nota gravissima, apotheciis typice orbicularibus, differunt a *Graphideis*, quarum apothecia typice elongata aut angulosa difformiave sunt (etiam in *Platygr. periclea* typica pr. p. irregularia sunt). Etiam inter fungos cyclocarpeos species *Lecanactideis* affines cognitæ sunt. Ad tales pertinent *Patellariæ*, velut *P. pruinosa* Karst. Hedwigia, 1889, 193, cet.

(To be continued.)

A NEW VARIETY OF ENTERIDIUM OLIVACEUM Ehrenb.

By Arthur Lister, F.L.S.

In the description of *Licea flexuosa* Pers. in the British Museum Catalogue of Mycetozoa, p. 150, attention is called to the alliance which appears to exist between that species and *Enteridium olivaceum*, and reference is given to a specimen from Glen Tanner, Appin, Argyle, in the Kew collection, which resembles *Licea flexuosa* in the plasmodiocarp form of the sporangia, and in the absence of a pseudocapillitium. In this specimen, however, the spores are in clusters, and exactly correspond with those of *Enteridium olivaceum*, instead of being free, as in the case of the three known species of the genus *Licea*. The Appin gathering was placed by Berkeley as *Licea flexuosa*, and was afterwards examined by Rostafinski, who marked it as *Enteridium olivaceum*. Since the publication of the Catalogue, the same form has been met with on three occasions, namely, in a fir plantation at Leighton Buzzard, in the New Forest, and in Lord Radnor's woods at Alderbury, Wilts. The purple-brown plasmodiocarps were found on decorticated logs of Scotch fir, long exposed to weather and green with algæ. The sporangia were 0·6 mm. broad by 0·3 mm. thick; in some instances their shape was linear, while in others they were extended to form a flat network 9 mm. long by 4 mm. broad. At Alderbury it was found in company with the comparatively simple plasmodiocarps of *Licea flexuosa*. The only specimens I had previously examined of the latter species were one from Germany, in De Bary's collection at Strassburg, and one from Aboyne, Scotland, in Berkeley's herbarium at Kew, and several gatherings made by myself in Norway.

The form under consideration differs from *Licea flexuosa* not only in the clustered spores, but in the structure of the sporangium-wall, which is shining and smooth, with minute granular matter diffused throughout its almost homogeneous substance. In *Licea flexuosa* the wall has a dull opaque appearance, occasioned by the deposit of refuse matter in the form of rough aggregations spread over the surface of the membranous inner layer. In examining several specimens of the new form, we also find that a pseudo-capillitium is by no means universally absent, but in some cases the plasmodiocarp bears on its inner surface membranous bands and folds connecting the base with the upper wall, having a strong resemblance to the pseudo-capillitium in an æthalium of *E. olivaceum*, though developed to only a small degree. Taking the above characters into consideration, there is reason to conclude that, notwithstanding the wide difference in general appearance from the usual æthalioid form of *E. olivaceum*, these gatherings should be classed as a variety of that species. At the same time, on account of the constancy of the plasmodiocarp habit exhibited in the four gatherings which have come under my notice, it is entitled to a distinct varietal name, and I propose to mark it as *E. olivaceum* var. *liceoides*.*

Within a few yards' distance from the specimens of the above-named variety found at Leighton Buzzard, a few small æthalia of *E. olivaceum* were gathered, of pulvinate form, and with the pseudo-capillitium perfectly developed; but in these the spores were free, with no appearance of the usual clustering, though in all other respects they were typical, and like other gatherings found in the same plantation with clustered spores. A similar form with free spores is in the collection of Prof. Balfour.

A type specimen of *Enteridium Rostrupii* Raunk. has courteously been supplied to the British Museum by Dr. Raunkier, of Copenhagen. It is a thin æthalium, and, having dried too quickly, is not perfectly mature, otherwise it is a typical form of *Enteridium olivaceum*. It has the usual pseudo-capillitium consisting of the perforated walls of the component sporangia, and the clustered spores measuring 10–12 μ diam., of the same size as those in the type specimens of the latter species in the British Museum, Kew, and Strassburg herbaria. It is part of a longer æthalium, and is 2·5–4 mm. broad, 19 mm. long, and 0·4–0·75 mm. thick; the diameter of the sporangia composing the æthalium is 0·2–0·3 mm. Dr. Raunkier explains in a letter that, finding the spores to be so much larger than the measurements given by Schroeter, *viz.* 6–8 μ, he published the description of his gathering under a new name, "until more could be known about it." The æthalium does not consist of "one layer of sporangia,"† but preparations from the thinnest part so much resemble those of the plasmodiocarp of var. *liceoides* that it confirms the opinion that the latter is a form of *E. olivaceum*.

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* In the description of *Licea flexuosa* in the British Museum "Guide to the British Mycetozoa," p. 32, the spores are mentioned as sometimes occurring in clusters, a character based on the Appin and Leighton specimens. On the view here adopted this statement should be omitted from the account of the species.

† Cfr. British Museum Catalogue of Mycetozoa, p. 159.

The circumstance of finding æthalia of *E. olivaceum*, some with clustered and others with free spores, is interesting as adding to former experience that in species in which the spores are as a rule in clusters, an exception is occasionally met with. Thus in *Badhamia hyalina*, where the spores are usually in large clusters of twenty or more, they are sometimes almost free. In *Leocarpus vernicosus*, on the other hand, in which they are generally free, we now and then find them in compact clusters. In *Badhamia utricularis*, the spores usually in loose clusters of six to fourteen, often easily separating in mounting, but in this species the amount of adhesion varies considerably. In developments of sporangia which have occurred at intervals in cultivations conducted during nine years from one original gathering of plasmodium, the spores of some might almost be described as free (resembling in this respect several of the specimens in the Strassburg collection), while in others they showed the usual cohesion.

REVISION DES ROSA DE L'HERBIER BABINGTON.

PAR FRANÇOIS CRÉPIN.

(Continued from p. 182.)

ROSA TOMENTELLA Lem. Le *R. tomentella* Lem. étant assez répandu dans le comtés méridionaux de l'Angleterre, il ne paraissait pas possible que Woods l'eût passé sous silence dans sa monographie, et que Smith et Borrer ne l'eussent pas décrit. En se bornant au seul texte de la description, on ne peut douter un seul instant que Woods avait bien décrit le *R. tomentella* Lem. sous le nom de *R. Borreri*. L'examen d'échantillons authentiques conservés dans l'herbier Babington confirme parfaitement cette façon de voir, et démontre en outre, que le *R. inodora* Borr. est bien la même espèce. M. Baker, en séparant le *R. Borreri* Woods du *R. tomentella* Lem., s'est évidemment trompé sur l'identité spécifique de ces deux Roses.

En présence de l'identité de celles-ci, il y a lieu de rechercher quel est le nom princeps qui doit être appliqué à l'espèce en question. Lemau a publié son espèce en 1818, tandis que Woods a proposé le nom de *Borreri* en 1816, lors de la lecture de son mémoire dans deux séances de la Société Linnéenne de Londres. L'antériorité serait acquise à ce dernier nom spécifique si le *Synopsis* de Woods avait paru en 1816, mais il est à remarquer que ce travail n'a vu le jour que dans le tome xii des *Transactions* de la Société Linnéenne portant la date de 1818, et qu'il n'a pas été distribué, avant cette date, sous forme de tiré à part. Il résulte de là que la date de 1818 s'applique aux deux noms. Dans ce cas, lequel faut-il choisir? Le nom de *R. tomentella* étant le plus connu, le plus fréquemment employé, paraît devoir être préféré. Un cas analogue se présente pour les noms de *R. Jundzilli* Besser et *R. trachyphylla* Rau, qui sont tous deux de 1816.

Le *R. tomentella*, dans sa forme à dents composées-glanduleuses, se présente assez rarement à folioles églanduleuses en dessous ; plus fréquemment, les nervures secondaires sont glanduleuses, et les glandes peuvent envahir en plus ou moins grande abondance le parenchyme interposé entre les nervures secondaires. Cette glandulosité foliaire a fait ranger, par quelques auteurs, le *R. tomentella* dans la sous-section *Rubiginosæ*, mais ce classement est inadmissible.

Le *R. tomentella* est habituellement à pédicelles lisses, et ses variations à pédicelles hispides-glanduleux sont rares. C'est l'une de ces dernières que Dumortier a décrite comme var. *decipiens*.

Le type de Leman est entouré d'assez nombreuses formes dont un certain nombre lui ont été rapportées comme variétés, mais sont-elles bien des variétés de cette espèce ? Plusieurs ne seraient-elles pas des variétés du *R. canina* pubescentes, à dents composées-glanduleuses, à pédicelles lisses ou hispides-glanduleux, et devant composer deux nouveaux groupes de cette espèce à la suite des groupes *R. dumetorum* et *R. Deseglisei ?*

Ces formes litigieuses devront faire l'objet de recherches approfondies avant de pouvoir être classées définitivement. Les Iles Britanniques nourrissent un certain nombre de ces formes. L'une d'elles a été décrite par M. Christ (*Journal of Botany*, 1875) sous le nom de *R. sclerophylla* Scheutz.

Le *R. tomentella* Leman, tel que je le comprends en lui unissant le *R. obtusifolia* Desv. comme variété à dents simples, se distingue : 1°, par des aiguillons assez courts, fortement épaissis à la base, à pointe crochue courte ; 2°, par des folioles relativement petites, assez courtes, largement ovales, à nervures latérales remarquablement saillantes ; 3°, par des pédicelles ordinairement assez courts ; 4°, par des sépales extérieurs fortement appendiculés, à appendices inférieurs plus ou moins profondément incisés et à incisions dentées. Les buissons de cet espèce ont un cachet particulier qui les fait aisément distinguer des buissons du *R. canina*.

Le *R. tomentella* est, comme nous l'avons dit précédemment, répandu dans les comtés méridionaux de l'Angleterre. Existe-il en Écosse ? Woods indique bien une var. *β*. de son *R. Borreri* près d'Édimbourg, mais M. Baker pense que l'échantillon qui représente cette variété dans l'herbier de Woods appartient au *R. tomentosa* Sm. Il y aura à rechercher si l'espèce existe en Irlande.

Rosa glauca Vill. (*R. Reuteri* Godet). Dans les Iles Britanniques, comme en Scandinavie et dans d'autres pays, le *R. glauca* Vill. est resté très long temps confondu parmi les variétés du *R. canina*. Cette confusion a lieu de surprendre en présence des caractères remarquables de cette espèce, qui constitue un groupe de formes montagnardes morphologiquement et biologiquement distinct de celui du *R. canina*. Le port du *R. glauca* est, en général, plus trapu que celui du *R. canina ;* ses feuilles ont ordinairement une teinte glaucescente très accusée ; ses stipules supérieures et ses bractées sont plus dilatées et cachent souvent les pédicelles qui sont plus courts ; ses sépales se redressent après l'anthèse et couronnent les réceptacles jusqu'à la maturité; sa corolle est ordinairement d'un rose plus vif; ses styles sont densément tomenteux à poils faisant saillie entre les stigmates, qui forment un capitule hémisphérique épais; enfin la maturation des réceptacles est parfaite environ une quinzaine de jours avant celle du *R. canina.*

Woods ne semble pas avoir soupçonné l'autonomie spécifique du *R. glauca*, qui est très répandu en Écosse, et n'est pas très rare, à une certaine altitude, en Irlande et en Angleterre. Toutefois le *R. nuda* Woods, établi sur un unique échantillon, a paru à M. Baker appartenir au *R. glauca*, de même que les var. δ et ζ du *R. sarmentacea* Woods, à en juger par les spécimens de l'herbier de Woods.

Le *R. glauca* présente des groupes de variations parallèles à celles du *R. canina.* Ces groupes sont :

(1.) Dents simples, pédicelles lisses, sépales lisses ou glanduleux sur le dos.
(2.) Dents doubles ou composées-glanduleuses, pédicelles lisses, sépales lisses ou glanduleux sur le dos.
(3.) Dents simples, pédicelles hispides-glanduleux.
(4.) Dents doubles ou composées-glanduleuses, pédicelles hispides-glanduleux.
(5.) Dents composées-glanduleuses, nervures secondaires glanduleuses, pédicelles lisses.
(6.) Dents composées-glanduleuses, nervures secondaires glanduleuses, pédicelles hispides-glanduleux.

Comme on peut le voir, ces six groupes correspondent aux groupes des *R. lutetiana* L., *R. dumalis* Bechst., *R. andegavensis* Bast., *R. verticillacantha* Mér., *R. scabrata* Crép. et *R. Blondæana* Rép.

J'ai vu, provenant des Iles Britanniques, des formes appartenant à ces six groupes du *R. glauca.*

La variété *subcristata* Bak. représente les groupes 2 et 4.

Le *R. glaucophylla* Winch., dont j'ai vu des échantillons authentiques dans plusieurs herbiers, appartient au groupe 2.

La variété recueillie dans le Derry par Moore et que M. Baker, dans sa monographie, p. 238, rapporte à sa variété *marginata*, appartient au groupe 6, de même que des spécimens récoltés par M. Bagnall dans le Warwickshire et par M. Bloxam dans le North-Wales.

Le No. 15 de l'*Herbarium Rosarum* de M. Baker, distribué sous le nom de *R. dumalis* Bechst., est un *R. glauca* appartenant au groupe 1. Le No. 26 de la même collection, distribué sous le nom de *R. arvatica* var. *nemoralis*, appartiendrait au groupe 5 sans la légère pubescence de ses pétioles et de la nervure médiane, qui milite en faveur de son incorporation dans l'un des groupes du *R. coriifolia* Fries. Ce No. 15 répond à la variété *celerata* Bak.

Le redressement des sépales après l'anthèse, et leur persistance jusqu'à la maturité des réceptacles, est un des bons caractères des *R. glauca* Vill. et *R. coriifolia* Fries. Mais ce caractère peut se produire accidentellement dans certaines variétés du *R. canina*, et donner lieu à de fausses identifications spécifiques. Cela me paraît avoir été le cas pour le *R. Hailstoni* Baker, qui ne doit pas être une variété du *R. glauca*, mais probablement une variété du groupe *R. dumalis* Bechst.

ROSA CORIIFOLIA Fries. Le *R. coriifolia* Fries (1814) a été moins longtemps méconnu en Angleterre que le *R. glauca*, car j'ai lieu de supposer, quoique je n'en aie pas vu d'échantillons authentiques, que le *R. cæsia* Sm., figuré dès 1811 dans l'*English Botany*, tab. 2367, est bien une variété du *R. coriifolia*. Plus tard, Woods décrivait celui-ci sous le nom de *R. bractescens*. La première mention du *R. coriifolia* paraît avoir été faite par A. T. Hedlund, dans une thèse soutenue sous le professeur Adamus Afzelius le 27 mai 1809, sous le nom de "*Rosa* foliolis subtus sericeis, fructibus globosis," comme var. 2 du *R. canina*. Cet auteur dit que cette variété semble identique au *R. arvensis* Roth (1788), mais ce rapprochement n'est pas fondé.

Le nom princeps à appliquer à l'espèce que nous connaissons bien aujourd'hui sous le nom de *R. coriifolia* Fries, est probablement le *R. cæsia* Sm., mais comme ce nom est peu connu ou peu employé, il vaut mieux lui préférer celui de *R. coriifolia* Fries. Remarquons toutefois que les noms de *R. frutetorum* Besser et *R. incana* Kitaibel, qui visent la même espèce, sont de même date, c'est-à-dire de 1814.

Les variétés du *R. coriifolia* peuvent se répartir en six groupes comme *R. glauca*. Ces groupes sont :

(1.) Dents simples, pédicelles lisses.
(2.) Dents doubles ou composées-glanduleuses, pédicelles lisses.
(3.) Dents simples, pédicelles hispides-glanduleux.
(4.) Dents doubles ou composées-glanduleuses, pédicelles hispides-glanduleux.
(5.) Dents composées-glanduleuses, nervures secondaires glanduleuses, pédicelles lisses.
(6.) Dents composées-glanduleuses, nervures secondaires glanduleuses, pédicelles hispides-glanduleux.

La variété *Watsoni* Baker correspond aux groupes 2 et 4,

La variété *Bakeri* Baker (*R. Bakeri* Déségl.) correspond aux groupes 5 et 6.

La variété *Lintoni* Scheutz se rapporte au groupe 5.

Le No. 25 de l'*Herbarium Rosarum* de M. Baker, distribué sous le nom de *R. dumetorum* Thuill., me paraît devoir se classer dans le groupe 1.

Enfin le *R. tomentosa* var. *obovata* Baker, dont j'ai vu des échantillons authentiques dans l'herbier Babington et dans celui d'Edimbourg, appartient incontestablement au groupe 5.

Le *R. pruinosa* Baker est peut-être encore une variété du *R. coriifolia* et probablement du groupe 6. Je n'ai pas eu l'occasion d'examiner d'échantillons vraiment authentiques de cette Rose. J'ai bien vu, dans l'herbier Babington, trois spécimens recueillis en 1866 par M. Bloxam à Taycross dénommés *R. cæsia* par leur collecteur et rapportés par M. Baker à son *R. pruinosa*, mais cette dernière identification est sans doute erronée, attendu que ces spécimens appartiennent à une variété du *R. tomentosa* Sm. et ne correspondent aucunement à la description que M. Baker a donnée de son *R. pruinosa*.

A mon sens, le *R. coriifolia* n'est pas spécifiquement distinct du *R. glauca*. L'un et l'autre représentent deux simples *états* du même type spécifique : d'un côté, une série de variations à feuilles glabres ; de l'autre, une série de variations à feuilles plus ou moins pubescentes. Remarquons que la pubescence et la glabréité sont les seuls caractères distinctifs, et qu'aucune autre différence n'est propre soit à l'état glabre, soit à l'état pubescent. Depuis Linné, l'importance attribuée au revêtement pileux ou glanduleux des organes a provoqué la séparation de formes qui sont essentiellement identiques.

Rosa micrantha Sm. Dans l'herbier Babington, se trouvent des spécimens de la curieuse variété du *R. micrantha* Sm. que M. Baker a décrite sous le nom de *Briggsii*. Cette forme, dont je possède une belle série d'échantillons des environs de Plymouth, est remarquable par l'absence complète de glandes sur les pédicelles, les réceptacles, et le dos des sépales. Cette variété est à son type ce que la variété *jenensis* M. Schulze est au *R. rubiginosa* L. Cette disparition de glandes peut tromper l'observateur et lui faire rapporter la variété *Briggsii* au *R. sepium* Thuill. La seule forme des folioles de cette variété permet de la distinguer du *R. sepium*. Le Botanical Exchange Club a distribué, sous le nom de var. *Briggsii*, des spécimens du *R. sepium* recueillis par M. James White à St. Thomas's Head, dans le Somersetshire, spécimens dans lesquels Briggs avait cru reconnaître sa plante de Plymouth.

La variété *Briggsii* paraît être d'une extrême rareté. En Belgique, j'en ai autrefois observé un unique buisson, que j'avais rapporté au *R. sepium* ; mais j'ai rencontré des buissons du *R. micrantha* tendant à se rapprocher beaucoup de cette variété, à pédicelles lisses mélangés à des pédicelles très faiblement glanduleux, mais à sépales un peu glanduleux sur le dos. Le *R. micrantha* f. *pedunculo glabro* des Alpes Maritimes, décrit par M. Christ, est vraisemblablement une variété du *R. tomentella* Lem.

Rosa sepium Thuill. Dans sa monographie, M. Baker ne décrit pas le *R. sepium* Thuill., qui existe cependant çà et là dans les comtés méridionaux de l'Angleterre, ainsi qu'en Irlande. C'est sous le nom de *R. pulverulenta* qu'il faut rechercher, dans sa monographie, le *R. sepium*. Ce *R. pulverulenta*, qui n'est pas celui de Marschall von Bieberstein, et dont la synonymie est complètement fausse, comprend, d'après les recherches que j'ai faite dans les herbiers, non seulement des variétés du *R. sepium* Thuill., mais le *R. graveolens* Gren., et même une variété du *R. tomentosa* Sm. C'est à cette dernière espèce que doivent se rapporter les spécimens recueillis à Richmond par Jos. Ward.

(To be continued.)

HEREFORDSHIRE RUBI.

By the Rev. Augustin Ley.

(Concluded from p. 162.)

R. Radula (sp. collect.), var. a. Radula W. *Flora*, 99, 522. Woods and thickets, rare. At Welsh Newton, at Gorstley, and at three or four other localities in the south of the county; not seen elsewhere.

Var. b. anglicanus Rogers. *Flora*, 96 (under *R. mucronulatus* Blox.), 99 (as *R. Radula* W.). Woods and thickets, rare. Carey Wood, Brockhampton, and at one or two other stations scattered over the south of the county; not seen elsewhere. First record, *Journ. Bot.* 1895, 82.

Var. c. echinatoides Rogers. Still more rare than the last? At Walford (*teste* Rogers), and at Gorstley in the south. Unknown elsewhere.

It is curious that all the above forms of *R. Radula* should be confined to a few stations in the south of the county.

Var. d. sertiflorus P. J. Muell. *Flora*, 94 (under *R. macrophyllus* W.), 522. In woods; locally abundant. From Penyard Park Wood, Ross, ranging through nearly all the large woods northwards to Rotherwas Park Wood in the centre, and in many of them abundantly. At a single station at Shucknell Hill in the east.

R. regillus, n. sp. *Flora*, 522 (as *R. debilis* Boul.). Stem bluntly angled, thick and branched below, forming a low arch, yellow-green or pink-green in exposure, hairy, glaucous, with slender, declining, rather scattered and unequal prickles, from enlarged bases, numerous acicles and *unequal* stalked glands, *very leafy*. Leaves 3–5nate-pedate, *leaflets large*, green on both sides, upper surface nearly smooth, under slightly hairy. Serration coarse and uneven. Terminal leaflet with *short* stalk, *oblong*, flat, *suddenly contracting into a conspicuous acumen;* lateral similar, rather smaller, nearly sessile. Panicle lax, hairy, with declining prickles, and stalked glands more numerous upwards, *leafy nearly to the top*, with short, ascending, racemose branches below, and a nearly racemose top. Panicle-leaves ternate, similar to those of the stem. Sepals ovate-acuminate, with long hair externally, reflexed in flower and fruit. Petals white, obovate, ciliate; stamens white, exceeding the green styles; fruit well-formed. Woods and hedges. Abundant in Queen's Wood and Linton Wood on the south-east borders of Herefordshire; Haywood, West Gloucester. The above localities all adjoin, and form a large woodland area, in which the plant grows at intervals, both in woods and hedges, over an area of at least three square miles. See the remarks of Rev. W. M. Rogers on this bramble in *Journ. Bot.* 1892, 302, 303, under *R. cognatus* N. E. Br. The mostly ternate leaves, with nearly equal leaflets, the narrow lax panicle, and the yellow-green of the whole plant are conspicuous features.

R. podophyllus P. J. Muell. In heathy woods; rare? Discovered last year in a hilly wood, Hope Mansel, on the southern border of the county. Mr. Benson finds this bramble in Shropshire; and as it was also found last year in the hilly woods near Trelleck, Monmouthshire, it will probably prove to have a larger range than at present appears in Herefordshire. First found, 1895.

R. ECHINATUS Lindl. *Flora*, 99 (as *R. rudis* W.). Wood-borders and hedges; common, and distributed over all the county. Often one of the most abundant of the glandular brambles.

R. OIGOCLADOS Muell. & Lefv. In woods, very local. The wooded hills of the centre of the county near Foxley and Weobley are the home of this bramble; in these it is extremely abundant. One or two other stations in the south and west exist, but the plant is rare, except in the single district above indicated. First notice, *Journ. Bot.* 1895, 82.

Var. b. NEWBOULDII Bab. In woods, rare; nowhere occurring in great abundance, like the type. Belmont, Dinmore, and at one or two other stations in the centre, and one in the north of the county. First notice, *Journ. Bot.* 1895, 82.

R. RUDIS W. & N. Woods and wood-borders, very rare. Only found as yet in a single neighbourhood, at several localities, near Dulas, in the west of the county. Occurring at Symond's Yat, West Gloucester (*Rogers*!!), within a few yards of the Herefordshire boundary. First found, 1892; first record, *Journ. Bot.* 1895, 100.

R. PRÆRUPTORUM Boul. In woods, scattered and rare. One station (Hope Mansel) in the south, two (Dinmore and Wormesley) in the centre of the county. Our plant is very near the *R. Griffithianus* Rogers, of Carnarvonshire (*Flora of Carnarvonshire and Anglesea*, 1895, 48); but is not, in the opinion of Mr. Rogers, identical with either this or the Dorset *R. præruptorum*. First found, 1885.

R. BABINGTONII Bell Salt. In woods, rare and rather local. Known at two stations (Walford and Yatton) in the south of the county, and at several in the neighbourhood of Presteign and Eardisley in the north. In the last-named stations the plant occurs in great abundance. First found, 1892.

R. LEJEUNEI W. & N.. var. b. ERICETORUM Lefv. *Flora*, 99, 522 (under *R. Radula* W.). In woods and thickets, very local. Occupying a single area in the county, of which Eardisley forms the centre. Near this centre the abundance of this plant gives a marked feature to the bramble flora of the district; it thins out rapidly to east and west, occurring in a few outlying stations. First notice, under the present name, *Journ. Bot.* 1895, 100.

R. CAVATIFOLIUS P. J. Muell. *Flora*, 101. Woods and thickets, very scarce. This beautiful bramble is abundant a few miles to the south-west of our area, in the district of Monmouthshire bordering on the Wye Valley, where it was first detected in Britain. A few outliers alone appear to reach Herefordshire. One bush known on the Little Doward Hill, one on Howle Hill, both near Ross, on the southern borders of the county.

R. SCABER W. & N. Exclude *R. scaber*, *Flora*, 521. In woods, very rare. One station in the south, at Ganarew; one in the west, near St. Devereux. First notice, *Journ. Bot.* 1895, 101. A plant much resembling *R. Bellardi* W. & N. in its leaves, and mentioned under this name in the *Flora* (p. 105), grows in the Tintern neighbourhood, and has been, no doubt correctly, attributed to *R. scaber* W. & N. by Dr. Focke. It reappears in more than one station in the south of Herefordshire. Great Doward; and in Queen's Wood, Upton Bishop. I should like to be allowed to name it var. *pseudo-Bellardi.*

R. OBSCURUS Kalt. In woods; abundant at a single station in the centre of the county; unknown elsewhere. Woods at Belmont, near Hereford. The bright red petals, stamens and styles, and the clasping sepals, make this a striking bramble. First detected by Rev. E. F. Linton and myself in 1893; seen *in situ* by Dr. Focke in 1894, and pronounced by him to be the typical *R. obscurus* Kalt. of the Continent. First notice, *Journ. Bot.* 1895, 101.

R. FUSCUS W. & N. *Flora*, 97 (*R. Bloxamii* Lees), 104 (*R. foliosus* W.), 521 (*R. thyrsiflorus* W. & N.), 523 (*R. fuscus* W. & N.). In woods and thickets, widely spread, and locally abundant. Found in all parts of the county: abundant in the south, at Bishopswood; in the east, at Cowleigh Park, Malvern; in the north at Croft; in the west at Moccas. The Bishopswood plant has been pronounced by Dr. Focke to be identical with the German *R. fuscus* W. & N. Those growing at Cowleigh and Moccas were uniformly named *R. thyrsiflorus* W. & N. by the late Prof. Babington, and present a very robust form of the species, in which the opening panicle is nodding in bud, as in the New Forest variety named *nutans* by Mr. Rogers.

Var. c. MACROSTACHYS (P. J. Muell.). In woods. In several stations in the south of the county, in one of which (Rigg's Wood, Sellack) it was first detected by Dr. Focke in 1894; probably also elsewhere; but I do not feel sure of the limits of this variety and typical *R. fuscus* W. & N. First notice, *Journ. Bot.* 1895, 101.

R. LOEHRI Wirtg. In hilly woods; locally abundant. Ranging along the southern boundary of the county from Great Doward on the west to Queen's Wood in the east, this bramble is also abundant in the adjoining parts of the vice-county of West Gloucester, in the Forest of Dean, and in Newent Woods. I am not aware of its having been detected as yet in any other county. First record, *Bot. Exch. Club Report*, 1888, 209. Dr. Focke, after suggesting this name for it in 1888, withdrew his suggestion upon seeing the plant *in situ* in 1894. An inspection, however, of authentic continental specimens in the herbarium of Rev. W. Moyle Rogers allows no doubt to remain that our plant is identical with *R. Loehri* Wirtg. Its nearest alliance, among British brambles, seems to be with *R. fuscus* W. & N. and *R. pallidus* W. & N., especially with the latter. In comparison with these brambles, the very leafy stem, very densely clothed with stalked glands; the thin texture of the shouldered ovate-acuminate leaflets, which are green on both sides and have coarse toothing; and the short broad panicle, much branched, with slender branches, are characteristic of *R. Loehri* Wirtg. Specimens of this plant, from Linton Wood, Herefordshire, were issued in Sets of British Rubi, 1892–1895 (No. 18), under the name of *R. fuscus* W. & N.

R. PALLIDUS W. & N. Rare in Herefordshire; always in woods. Known at three stations in the north of the county (Lingen, Titley, and Winforton), and one in the west (St. Devereux). In the south its place appears to be taken by *R. Loehri* Wirtg. First found in 1891; first notice, *Journ. Bot.* 1895, 101.

R. LONGITHYRSIGER Lees. *Flora*, 103 (as *R. pyramidalis* Bab.). Abundant in woods over nearly the whole of Herefordshire, except the east of the county, where, however, it occurs in Westhide Wood. Occurring at Great Doward in the south, Lyonshall in the north, and Gilbert's Place Wood in the west, in great abundance; and at many other stations.

R. FOLIOSUS W. & N. *Flora*, 103 (as *R. Guentheri* W.). Exclude *R. foliosus* W. & N., pp. 104, 522. Widely distributed and often abundant in Herefordshire woods, from Ross in the south to Ludlow in the north. Less common in the east, where, however, it occurs in the Storridge Woods; and unrecorded for the western boundary.

R. ROSACEUS (sp. collect.). Var. a. ROSACEUS W. & N. Rare and scattered in Herefordshire. Abundant at one station in the south (Linton Wood, Gorstley); occurring at two in the north (Titley and Winforton). First found in 1887.

Var. b. HYSTRIX (W. & N.). *Flora*, 97 (*ex parte*). Rare in Herefordshire. Vallets Wood, and one other station in the north of the county.

Var. d. PURCHASIANUS Rogers. *Flora*, 105 (as *R. Reuteri* Merc.). Locally abundant in the south of the county, especially near Ross; but extending northwards to Aconbury, westwards to Welsh Newton, and eastwards to Yatton; and crossing the border into Monmouth and West Gloucestershire. Not confined to woods, but spreading to hedges and open ground. *R. Purchasianus* Rogers was issued in Sets of British Rubi, 1892–1895 (No. 22), as *R. obscurus* Kalt.

A plant occurs (*Flora*, 105, as *R. hirtus* Bab.) growing in company with *R. Purchasianus* Rogers, and undoubtedly very near it, but uniformly distinguishable by its fewer and weaker prickles, and its more abundant hair on the stem and rachis. Great Doward, and at several other stations in the south of the county. It has been suggested with probability that it is of hybrid origin.

Var. e. INFECUNDUS Rogers. *Flora*, 97 (as *R. Hystrix* W., *ex parte*); 98 (as *R. rosaceus* W., *ex parte*). Very abundant nearly throughout Herefordshire, and in some parts forming a large proportion of the bramble flora of the woods. Unrecorded at present in the Leominster and Kington districts in the north. Although ripening its fruit shyly and irregularly, *R. infecundus* hybridises very readily. The fruit when well-formed is round and of a full black.

R. ADORNATUS P. J. Muell. *Flora*, 102 (under *R. Lejeunei* W.); 522 (as *R. foliosus* W.). In woods and thickets, local. Found at Gorstley and other stations in the south-east and south of the county, and in the north near Aymestry.

R. KOEHLERI (sp. collect.). Var. a. KOEHLERI W. & N. In woods and thickets, rare and local. Detected as yet only on the southern borders of the county at several stations in Walford and Hope Mansel parishes, whence it crosses into West Gloucester in the Lea Bailey plantations, Forest of Dean. The plant above-mentioned is named type *Koehleri* W. & N. on the authority of Dr. Focke, who saw it *in situ* in 1894, and pronounced it without hesitation to be identical with the typical *R. Koehleri* of Continental Europe. At the same time it must be observed that our plant is a far more slender, less armed form than any of those which English batologists had been accustomed to name *R. Koehleri*. First found in 1891.

Var. b. PALLIDUS Bab. *Flora*, 100. Widely spread in Herefordshire, as in Britain generally. *R. pallidus* Bab. (with *R. Leyanus* Rogers and *R. argentatus* P. J. Muell. var. *clivicola*) is one of the species flourishing at the greatest altitude above the sea, rising, in Breconshire at least, to about 1300 ft.

Var. c. COGNATUS (N. E. Br.). *Flora*, 102 (under *R. Lejeunei* W.); 521 (as *R. Bloxamii* Lees). In woods and thickets, locally abundant. Spread over the south and parts of the central and eastern districts; most abundant in Haywood Forest and the woods between Aconbury and Ross; but apparently not occurring to the north of Hereford. The plants brought together here are in my judgment all referrible to a single species; but I wish to state that I am alone responsible for this arrangement, which I have ventured to make after watching them growing for about twenty years. They have long been subjects of much controversy, and have lately been referred by Dr. Focke partly to *R. fuscus*, partly to *R. Koehleri*, and by Rev. W. M. Rogers partly to *R. fuscus*, partly to *R. cognatus*. The plants in question are very constant in general aspect, and in the shape of the leaves and of the panicle, but vary greatly in the *amount*, though not so much in the *character* of the armature, both of the stem and rachis. They are not precisely identical with the Surrey plant for which the name of *R. cognatus* was first coined by Mr. Brown. First notice, *Journ. Bot.* 1895, 102.

R. MARSHALLI Focke & Rogers. In woods and thickets; not common (at least in a typical state). Plants referred to *R. Marshalli* by Rev. W. M. Rogers, and representing the species exceedingly well, have been found in Hope Mansel parish in the south, and at more than one station in the north and west. Many other plants, at present omitted as doubtful, will probably come to be ranged under *R. Marshalli* when its limits are better understood. First notice, *Journ. Bot.* 1895, 103.

R. FUSCO-ATER Weihe. *Flora*, 101. Woods and thickets, very rare. Abundantly at a single station in the south of the county, in plantations and thickets at Welsh Newton. The late Prof. Babington uniformly named this Welsh Newton plant *R. fusco-ater* W.; and Rev. W. M. Rogers concurs in this identification. First record, *Bot. Exch. Club Rep.* 1880, 30.

R. VIRIDIS Kalt. In woods; very rare. Known at present at a single station in the north-west of Herefordshire, at Winforton. Found also by me in the same year at a single station in Breconshire (Glyn Tarell). First found in 1895.

R. DIVEXIRAMUS P. J. Muell. *Flora*, 98 (under *R. rosaceus* W.); 522 (as *R. humifusus* W.). In hilly woods, very local. Abundant on sandstone conglomerate on the Great and Little Doward Hills, and at one other station in the south-west corner of Herefordshire, whence this bramble ranges into the adjoining parts of West Gloucester and Monmouthshire. First discovered in Britain in 1873, at the Buckstane, near Staunton, West Gloucester, where it is abundant; but not recognized as *R. divexiramus* P. J. Muell. until submitted to Dr. Focke in 1892. First record, *Journ. Bot.* 1893, 4.

R. ACUTIFRONS A. Ley. *Journ. Bot.* 1893, 13. In woods and thickets, local. Known in several localities in the south, one in the centre, and one in the western division of the county. This bramble occurs also in Worcestershire, in the neighbourhood of Stanford, on the Teme.

R. BELLARDI W. & N. *Flora*, 105. In woods. Confined, as at present known, to a single station on the eastern border of the county at Storridge. Several plants from other stations have been named *R. Bellardi* W. & N. by various authorities, and bear great resemblance to it, but have not been admitted to be such by Dr. Focke or Rev. W. Moyle Rogers. These must for the present be left over.

R. SERPENS W. *Flora*, 523 (*R. serpens* W. & N. and *R. hirtus* W. & N.). In woods, rare; but locally abundant at its stations. Known at two stations (Edwin Wood, near Bromyard, and Westhide Wood) in the east; in both of these occurring in great abundance. At a third station in the north-east (Stanford Park, on the Teme) the plant extends also into Worcestershire.

R. HIRTUS W. & K. (sp. collect.). In woods and thickets, rare. Two forms at least occur in Herefordshire which are to be placed under aggregate *R. hirtus* W. & K. One of these has been named both by Dr. Focke and Rev. W. M. Rogers *R. rubiginosus* P. J. Muell.; the other does not distinctly fall under any of those named in *Lond. Cat.* ed. 9. Each occurs in three localities, scattered through the south, east, and north of the county. First notice, both for aggregate and for *R. rubiginosus*, *Journ. Bot.* 1895, 104.

R. OCHRODERMIS A. Ley. *Journ. Bot.* 1893, 15; *Flora*, 520 (under *R. mucronulatus* Blox.). Widely spread in Herefordshire, in woods and in rough open ground. Known to occur at about eight stations scattered through the south, east, centre, and north of the county.

R. VELATUS Lefv. *Flora*, 101 (under *R. cavatifolius* Muell.). In woods and thickets, rare. One station at Howle Hill in the south, one at Cowleigh Park in the east, one at Titley in the north. First found about 1884; first named as a British plant by the late Prof. Babington in 1889 or 1890, on Cowleigh Park specimens. First notice, *Journ. Bot.* 1893, 7; 1895, 104.

R. DUMETORUM W. & N. *Flora*, 107 (as *R. corylifolius* Sm. var. *purpureus*), 108. Taken as an aggregate, *R. dumetorum* W. & N. is perhaps the most abundant of Herefordshire brambles, occurring chiefly as a hedge plant, but also abundant in open woods, where it begins to flower along with *R. cæsius* L., as the earliest species, in the end of June. I have not the requisite knowledge to give the distribution of its varieties accurately; but var. a. *ferox* W. is far the most abundant throughout the county; var. b. *diversifolius* (Lindeb.) occurs (*teste* Rogers), but much more rarely; var. e. *tuberculatus* Bab. I believe to be pretty common; var. f. *concinnus* Warren has been passed by the same authority, but is certainly rare; var. g. *fasciculatus* P. J. Muell. also occurs.

R. CORYLIFOLIUS Sm. *Flora*, 106, 107. Var. a. SUBLUSTRIS (Lees). Very rare in Herefordshire. Characteristic and typical at one station in the north (Pudlestone); scarcely found elsewhere.

Var. b. CYCLOPHYLLUS Lindeb. This is a well-marked form which is locally common, at least in the south of the county, and occurs in many other districts. *R. corylifolius* Sm., taken as an aggregate, is sparsely distributed through Herefordshire, and is nowhere an abundant species.

R. COMMIXTUS Frid. & Gel. *Bot. Tids.*, Copenhag. 1890, p. 245. Damp wood-border, Coldborough Park, in the south of the county; 1888, and again in 1890. Named by Dr. Focke. *R. commixtus* Frid. & Gel. appears to be closely connected with *R. corylifolius* Sm., under which species it would probably be ranged as a variety by British batologists. It differs from ordinary British forms of *R. corylifolius* in the assurgent fruiting calyx, and in the presence of rather numerous stalked glands upon the rachis, besides other less remarkable characters. It does not seem to approach any of the forms of *R. dumetorum* W. & N. I am not aware that *R. commixtus* Frid. & Gel. has been previously recorded as British.

R. BALFOURIANUS Blox. Exclude *R. Balfourianus* Blox., *Flora*, 106. Wood-borders and bushy places; rare in Herefordshire. At two localities in the south of the county (Yatton and near Mordiford); unknown as yet elsewhere. First record, the present paper; the inclusion of Herefordshire in the list of vice-counties in *Journ. Bot.* 1895, 105, being founded on plants now pronounced to be hybrids.

R. CÆSIUS L. *Flora*, 110. Abundant as an aggregate in Herefordshire, chiefly on low damp ground and ditch- or stream-sides. Of the named varieties, all have been given for Herefordshire by the late Prof. Babington, with the exception of var. f. *hispidus* W. & N.; and occur, I believe, occasionally as well-marked forms; but the forms which are referrible to none of these named varieties are of far greater frequency, and no specially marked form seems to exist as *type cæsius*. Plants intermediate between the last four species are very common, and are now treated by the best authorities as hybrids; if this is really their origin, they often far exceed in abundance the parents from which they are supposed to originate.

NEW EAST AFRICAN CYPERACEÆ.

By C. B. Clarke, F.R.S.

I have provided Dr. Gregory with a list of the *Cyperaceæ* collected by him in his Kenia Expedition. Among them are seven which I have not been able to refer to any known species; of these diagnoses follow. *Juncellus minutus* has not the nut flattened on its anterior face, and is perhaps allied to the very small group of African *Cyperus* which have the three branches of the style reduced, very small, or obsolete. *Mariscus psilostachys* differs from nearly the whole of that large genus in being minutely hairy all over. *M. globifer* may be not distinct from *M. remotus*, but the flowers are quite young, and I have not here *M. remotus* for comparison.

Pycreus debilissimus, sp. n. Glabra, debilissima. Radices fibrosæ, tenues. Culmi 8–14 cm. longi, tenuissimi. Folia pauca, omnia sub-basalia, cum culmo subæquilonga, setacea, flaccida, debilissima; vaginæ membranaceæ, scarioso-bruneæ. Bracteæ 2, cum foliis consimiles, ima 6 cm. longa. Caput 1, 8-stachyum. Spiculæ sessiles, compressæ, castaneæ, 10 mm. longæ, 2 mm. latæ, 20-floræ; rhachilla persistens, subexalata. Glumæ arcte imbricatæ, duriusculæ, naviculares vix apiculatæ. Stylus brevis; rami 2, lineares, oblique in plano per rhachillam spiculæ transeunte. Nux lateraliter compressa, parvula, obovoidea, nigro-brunea, cum ½ parte glumæ æquilonga; cellulæ superficiales longitudinaliter oblongæ, magnæ, irregulariter sitæ (nux non transversim undulato-lineolata). Sp. *P. elegantulo* affinis.

Hab. Tana.

Juncellus minutus, sp. n. Glabra. Culmi 2–4 cm. longi, leves, trigoni, basi minute bulboso-incrassati, radicibus lentis. Folia omnia basalia, pauca, 2–3 cm. longa, 1 mm. lata, debilia, viridia. Bracteæ 2, cum foliis consimiles, ima 25 mm. longa, suberecta. Caput 1, 8-stachyum. Spiculæ 4 mm. longæ, 1 mm. latæ, compressæ, rubro-maculatæ, 6-nucigeræ. Glumæ arcte imbricatæ, naviculares, carinâ viridi in mucronem fere excurrente; rhachilla subquadrata, alis angustis hyalinis, omnino Juncelli. Stamen 1 (saltem interdum); antheræ ellipticæ, parvulæ, muticæ. Stylus longus, pertenuis, apice breviter 2–1-fidus. Nux perminuta, obovoidea fere subpyriformis, nigra, plano-convexa; cellulæ superficiales subquadratæ, inflatæ, lucidæ. Species *Cypero semitrifido* Schrader forsan affinis. Cf. præsertim Schweinfurth n. 120, in Abyssiniâ (Kohaito, alt. 2650 metr.) lectum.

Hab. Ongalea Montes; alt. 800 metr.

Mariscus concinnus, sp. n. Glabra. Culmus 25 cm. longus, tenuis, apice trigonus levis, basi vix (ob vaginas) incrassatus. Folia omnia basalia, usque ad 14 cm. longa, 3 mm. lata, debilia, flexuosa; vaginæ vix scariosæ neque inflatæ. Bracteæ 3–4, cum foliis consimiles, ima 5 cm. longa. Umbella simplex; radii 3–1, usque ad 15 mm. longi. Spica e 2–4 spiculis laxius spicata, basi non bracteata. Spiculæ 10 mm. longæ, 2 mm. in diam., teretes,

6-nucigeræ, saturate rubræ; rhachilla infra glumam imam nuciferam secedens, alis late oblongis, hyalinis. Antheræ lineares, ecristatæ. Stylus linearis, nuce brevior; rami 3, lineares, cum nuce subæquilongi. Nux cum ½ parte glumæ æquilonga, late oblonga, subæqualiter trigona, atro-rubra; cellulæ extimæ hexagonæ (nux "reticulata"). Sp. *M. leptophyllo*, forsan affinis.
Hab. Nagut Flumen, alt. 2000 metr.

Mariscus psilostachys, sp. n. Undique microscopice pubescens. Culmus 4 dm. longus, mediocris, apice levis triqueter, basi a vaginis scariosis (in fibrillas solubilibus) incrassatus. Folia omnia subbasalia, usque ad 14 cm. longa, 4 mm. lata, debilia, flexuosa. Bracteæ 3–4, cum foliis consimiles, ima usque ad 9 cm. longa. Umbella 5 cm. lata, 4 cm. alta, subsimplex, densiuscula. Spicæ rhachis 12 mm. longa, microscopice pilosula, 20-stachya, basi non bracteata. Spiculæ 8 mm. longæ, 1 mm. in diam., 5-nucigeræ, intensius rubro-bruneæ; rhachilla infra glumam imam nucigera secedens, alis oblongis scariosis. Glumæ remotæ, parvæ, proventu suberectæ, ovatæ obtusæ, multistriatæ, vix carinatæ, sparsim minute setoso-pilosæ. Stylus linearis, brevis; rami 3, longi, tenues. Nux cum ⅔ parte glumæ æquilongæ, anguste oblonga paullo curvata, subæqualiter trigona, brunea; cellulæ superficiales hexagonæ (nux inconspicue "punctato-reticulata"). Sp. *M. vestito* affinis.
Hab. Njoro.

Mariscus globifer, sp. n. Glabra. Culmus 3 dm. longus, mediocris, apice trigonus, levis, basi a vaginis multum incrassatus 15 mm. latus, ovoideus. Folia plura, omnia subbasalia, usque ad 1 dm. longa, 2 mm. lata, debilia, in sicco convoluta. Bracteæ 4, pendentes, cum foliis consimiles, ima 8 cm. longa. Caput 1, exacte globosum, 15 mm. in diam., stramineum, spiculis innumerosis, undique stellatis, densissime stipatum. Spiculæ 5–6 mm. longæ, ½ mm. latæ, subteretes, 5–6-glumæ, sesquifloræ, flore inferiore perfecto, superiore masculo. Glumæ distantes, nucigera oblonga obtusa, ecarinata, fere estriata, convoluta pertenuis. Antheræ lineares, ecristatæ. Stylus linearis; rami 3, pertenues, lineares, longi. Sp. (ex exemplo juvenili) *M. remoto* affinis.
Hab. Athi.

Mariscus Gregorii, sp. n. Glabra. Radices fibrosæ. Culmus 3 dm. longus, crassus, rotundus apice trigonus, levis, basi ob vaginas incrassatus, propagine laterali suberecto. Folia 14, omnia subbasalia, usque ad 11 cm. longa, 7 mm. lata, plana, crassa, dura sublucida, valide multistriata. Bracteæ 6, ima usque ad 7 cm. longa, cum foliis consimiles. Umbella 4 cm. lata, 3 cm. alta, densa, 6-radiata; spicæ densiuscule 16–22-stachyæ, spicatæ, basi ebracteatæ. Spiculæ 1 cm. longæ, 2–3 mm. latæ, compressæ, 8–10-floræ, stramineo-albæ, molliusculæ. Glumæ 3–4 mm. longæ, ovato-ellipticæ, obtusæ, leviter 9-nervosæ vix carinatæ, rhachilla infra glumam ima fructifera secedens, alis conspicuis ovatis scariosis. Antheræ lineares, ecristatæ. Stylus tenuis, breviusculus; rami 3, longæ, lineares. Nux fere 2 mm. longa, lineari-oblonga, æqualiter trigona, e bruneo fusce nigrescens; cellulæ

superficiales subhexagonæ sæpe punctatæ. Sp. *M. hemisphærico* proxima.

Hab. Tana (Kiroruma Flumen).

Mariscus maritimus, sp. n. Glabra. Culmi fasciculati, 4 dm. longi, graciles, apice trigoni leves, basi vix incrassati. Folia 4, subbasalia, usque ad 3 dm. longa, 1–3 mm. lata, debilia flexuosa; vaginæ bruneæ, striatæ, tenuiter membranaceæ. Bracteæ 4, usque ad 15 cm. longæ, cum foliis consimiles, basi paullo dilatatæ. Inflorescentia in 1 caput compositum congesta, 15 mm. longa et lata, fere pyramidata; spicæ 5–6. Spiculæ numerosæ, dense stipatæ, 5 mm. longæ, ovato-oblongæ, lucide castaneæ, 3-nucigeræ. Rhachilla infra glumam imam nuciferam secedens, alis ellipticis, alboscariosis. Glumæ ovato-oblongæ, vix acutæ, multo-striatæ vix carinatæ. Antheræ lineares, ecristatæ. Stylus linearis, breviusculis; rami 3, lineares, longi. Nux cum $\frac{3}{5}$ parte glumæ æquilonga, anguste oblonga, æqualiter trigona, lucide brunea; cellulæ superficiales hexagonæ, perobscuræ. Sp. *M. bulbocauli* var. *atrosanguineæ* affinis.

Hab. Mambrui, in arenis maritimis.

The types of the species here described are in the British Museum Herbarium.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 185.)

Schœnus ferrugineus L. Sp. Pl. 43 (1753). **1885.** "Collected beside Loch Tummel [Co. Perth] in July [1885] by Mr. [James] Brebner."—F. Buchanan White in Journ. Bot. 1885, 219.

S. nigricans L. Sp. Pl. 43 (1753). **1660.** "Hinton and Teversham Moors" (Cambs.).—R. C. C. 82.

Cladium jamaicense Crantz, Inst. i. 362 (1776). **1660.** "Hinton Moor" (Cambs.).—R. C. C. 43.

Kobresia caricina Willd. Sp. Pl. iv. 205 (1805). **1805.** "The honour of making this singular plant known is due to Mr. Dickson, who gathered it in the county of Durham in 1799. The Rev. Mr. Harriman had indeed found it in 1797."—E. B. 1410.

Carex dioica L. Sp. Pl. 972 (1753). **1690.** "Frequently found on the Bogs on the West side of Oxford."—Bobart in Ray Syn. i. 235.

C. Davalliana Sm. in Trans. Linn. Soc. v. 266 (1800). **1800.** "Discovered in marshy ground in Mearns-shire, North Britain, by Prof. James Beattie, jun., of Aberdeen."—Trans. Linn. Soc. *l. c.*

C. pulicaris L. Sp. Pl. 972 (1753). **1666.** "Gr. Cyperoides pulicare. A mile east from Oxford at Hockley of the Hole."—Merrett, 52.

C. rupestris All. Fl. Ped. ii. 264 (1785). **1836.** Discovered by Dr. Dickie and Mr. Templeton in Aberdeenshire.—Comp. Bot. Mag. ii. 191: found Aug. 2, 1836; note on E. B. drawing.

C. pauciflora Lightf. Fl. Scot. 543 (1777). **1777.** "We found this new species of *Carex* . . . about half-way up the mountain of Goat-field, in the Isle of Arran."—Lightfoot, *l. c.*

C. incurva Lightf. Fl. Scot. 544 (1777). **1777.** "This new species of *Carex* was communicated by Dr. Hope . . . . discovered in deep loose sea-sand at the mouth of the water of Naver, and near Skelherry, in Dunrosness, in Shetland."—Lightfoot, *l. c.*

C. divisa Huds. i. 348 (1762). **1688.** "Prope Hitham Colcestrensem in Essexia."—Ray Hist. ii. 1296.

C. disticha Huds. i. 347 (1762). **1670.** "Gramini cyperoidi ex monte Ballon simile . . . in palustribus et aquosis."—Ray Cat. 145. "Near Bungay, Suffolk, frequent."—Mr. Woodward in With. Bot. Arr. ed. 2, 1029 (1787).

C. arenaria L. Sp. Pl. 973 (1753). **1688.** "In arenosis locis frequens."—Ray Hist. ii. 1297.

C. diandra Schrank. in Act. Acad. Mogunt. 49 (1782). (*C. teretiuscula* Good. in Trans. Linn. Soc. ii. 163 (1792).* **1792.** "Prope Norwich. Dom. Crowe."—Goodenough, *l. c.* But see Ray Syn. i. 197.

C. paradoxa Willd. in Act. Acad. Berol. 39 (1794). **1843.** "In a boggy wood at Ladiston, near Mullingar [Ireland]. Mr. D. Moore."—Bab. Man. ed. 1, 337.

C. paniculata L. Sp. Pl. ed. 2, 1383 (1762). **1666.** "Gr. Cyperoides maximum spicis pendulis at Bocknam in Surrey, in a bog. Hujus radicibus utuntur pro sedilibus in agro Eboracensi."—Merrett, 51. Still called "Seat seggs" in Yorkshire.—F. A. Lees, Fl. West Yorkshire, 461.

C. vulpina L. Sp. Pl. 973 (1753). **1629.** "Ad insulam Sheppey. Gra. palustre Cyperoides, Lob."—Johns. Kent, 5. In Fl. Middx. "Gramen palustre echinatum" is erroneously identified with this species.

C. muricata L. Sp. Pl. 974 (1753). **1633.** "Gramen cyperoides parvum."—Ger. em. 21, & Johns. Merc. Bot. 41. "Gr. cyp. spicatum minus."—Ray Syn. i. 198, 9 (1690).

C. divulsa Good. in Trans. Linn. Soc. ii. 160 (1792). **1690.** "Gramen cyp. spicatum minus spica longa divulsa seu interrupta. In pascuis locis humidioribus."—Ray Syn. i. 199. "Harefield" (Middx.).—Blackst. Fasc. 36 (1737).

C. echinata Murr. Prodr. Gött. 76 (1770). *C. stellata* Good. (1792). **1690.** "Gramen cyp. spicatum minimum spica divulsa aculeata. Locis palustribus, solo putrido & spongioso."—Ray Syn. i. 199. Mr. Druce suggests that Merrett's "Gr. Cyperoides spica echinata simplici. Two miles southward from Oxford in the boggs" may be this.

C. remota L. Sp. Pl. ed. 2, 1383 (1762). **1663.** "Gramen cyperoides angustifolium panicula multiplici. On the banks of many ditches."—R. C. C. App. i. 5. "Harefield" (Middx.).—Blackstone, Fasc. 56 (1737).

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* N.B.—Vol. ii. of the Transactions is dated 1794; but, as Dr. Goodenough's paper was *read* April 3rd, 1792, I propose to quote it as above.

C. axillaris Good. in Trans. Linn. Soc. ii. 151 (1792). **1792.** "Mr. Curtis first found it near Putney."—Goodenough, *l. c.* But it had been previously distinguished from *C. remota* by Buddle.

C. Boenninghausiana Weihe in Flora, ix. 759 (1826). **1643.** "Near Hertford. Rev. W. H. Coleman."—Bab. Man. ed. 1, 338. "Was first recognized as a distinct species by Mr. Coleman in 1842."—Webb, Fl. Hertfordiensis, 315.

C. helvola Blytt in Nya Bot. Notiser, 58 (1849). **1886.** Collected by Prof. Balfour at Lochnagar, N.B., Aug. 11, 1846, and named *C. curta* var. *alpicola*. Recorded as *C. helvola* Blytt by Arthur Bennett in Journ. Bot. 1886, 149.

C. elongata L. Sp. Pl. 974 (1753). **1808.** "Mr. Jonathan Salt discovered this in June, 1807, in a marshy place at Aldwark, near the river Don, below Sheffield."—E. B. 1920.

C. lagopina Wahlenb. in Vet. Acad. Nya Handl. Stockh. 145 (1803). **1838.** "Discovered on rocks in Lochnagar, Scotland, in Aug. 1836, by Mr. Dickie & Mr. Clark."—E. B. Suppl. 2815.

C. canescens L. Sp. Pl. 974 (1753). *C. curta* Good. (1792). **1670.** "Gramen cyper. palustre elegans spicâ compositâ asperiore. In a pool not far from Middleton towards Coleshill in Warwickshire," &c.—Ray Cat. 147.

C. leporina L. Sp. Pl. 973 (1753). *C. ovalis* Good. (1792). **1690.** "Gramen cyperoides spica è pluribus spicis brevibus mollibus composita . . . In pascuis locis humidioribus copiose."—Ray Syn. i. 197. "In a wood near the boarded river" (Middx.).—Petiver in Gibson's Camden (1695).

C. alpina Sw. in Liljeb. Utk. Svensk Flora, ed. 2, 26 (1798). **1830.** Discovered in 1830 by Prof. Balfour and Dr. Greville "among some precipitous rocks which surround a small loch about two miles above Loch Callader."—E. B. Supp. 2666 (C. Vahlii).

C. atrata L. Sp. Pl. 976 (1753). **1777.** "Upon the highland mountains frequent as upon Benteskerney . . . in Breadalbane."—Lightfoot, Fl. Scot. 555.

C. fusca All. Fl. Ped. ii. 269 (1785). *C. Buxbaumii* Wahl. (1803). **1835.** Found in 1835 "on one of the small islands of Lough Neagh, County Derry. D. Moore."—Hook. Comp. Bot. Mag. i. 305.

C. elata All. Fl. Ped. ii. 272 (1785) (*C. stricta* Good. in Trans. Linn. Soc. ii. 196 (1792). **1792.** "Prope Norwich. D. Pitchford." —Goodenough, *l. c.* For earlier (? doubtful) synonyms see Bab. Fl. Cambs. 260; Ray Syn. ii. 264, 4; and Huds. ii. 412 (cæspitosa).

C. acuta L. Sp. Pl. 978, var. *β*. (1753). *C. gracilis* Curt. Fl. Lond. iv. 62 (c. 1783). **1670.** "Gramen cyp. majus angustifol. . . . in pratis humidis."—Ray Cat. 143. "In Battersea meadows." —Curtis, *l. c.*

C. trinervis Degland in Loisel. Fl. Gall. 731 (1807). **1884.** Found in 1869–70, in Norfolk, by Mr. H. G. Glasspoole.—Journ. Bot. 1884, 125.

(To be continued.)

SHORT NOTES.

Limnanthemum peltatum in S. Lincoln.—This species was sent to me last season from the lake in Syston Hall Park, near Grantham. I wrote to Sir John H. Thorold to enquire if it had been planted there to his knowledge, and received the following information:—"This plant appeared in the lake at Syston some ten to fifteen years ago. It must have been brought by one of the wildfowl which frequent the water, as I do not know of any in this district. The single plant first noticed has spread all over the lake, and has become a nuisance; luckily it cannot grow in deep water." I have a note, but no specimen, of its occurrence between Grantham and Woolsthorpe, in the Grantham and Nottingham Canal, between 1860 and 1870. Would it be bird-sown there? — E. Adrian Woodruffe-Peacock.

"Carex depauperata Curt. Cat." (p. 185).—Mr. Britten says that "this name must replace *C. ventricosa*." But why so, if the rejection of *nomina nuda*, constantly advocated in these pages, be a rule of any value? Besides this, it is surely unreasonable, and therefore unscientific, to supersede a well-considered name, accompanied by figure and description, in favour of a mere catalogue-title, which was deliberately withdrawn by its author himself. I hope that other British botanists will join me in declining to accept the above pronouncement.—Edward S. Marshall.

It does not appear to me that a name as to the application of which there has never been any doubt is what is generally understood as a *nomen nudum*. In the present instance, as I have already shown (p. 186), there is no possibility of doubt. I print Mr. Marshall's note because he specially requests me to do so; but the points he raises were fully considered by me before I wrote mine. Mr. Marshall is entirely in error in supposing *C. depauperata* to be "a mere catalogue-title"; if he had read my note more carefully he would have seen that it is adopted by Withering, who gives a full description. Whether the name be cited as

> "C. depauperata Curt. Cat. 92 (1783),"

or as

> "C. depauperata Curt. Cat. n. 228 ex With. Bot. Arr. ed. 2. 1049 (1787),"

or even as

> "C. depauperata With. Arr. ed. 2. 1049 (1787),"

is practically immaterial: what is certain is that in any case it antedates—

> "C. ventricosa Curt. Fl. Lond. fasc. vi. t. 68,"

which (cf. Journ. Bot. 1895, 113) can hardly date earlier than 1790. The contention that an author has a right to withdraw a name which he has published can hardly be made seriously; being public property, he has no longer any control over it. I do not think British botanists will accept Mr. Marshall's invitation to join him in declining to adopt what is, on every ground, the earliest name.—James Britten.

NOTICES OF BOOKS.

"Pseudo-Nomenclature."

A privately printed pamphlet bearing this title has been distributed by Mr. W. H. Beeby during the past month. It consists of a paper on the 9th edition of the *London Catalogue*, occupying three pages, which was offered to this Journal in August, 1895, and a postscript, to which seven pages are devoted.

Mr. Beeby quotes a sentence from the private letter in which we declined to publish the paper in these pages. That sentence hardly affords an adequate statement of our reasons: and as, through Mr. Beeby's kindness, we have a copy of the letter, it seems worth while to print it here, in order that it may be read by those who possess Mr. Beeby's pamphlet, and that the grounds of our action may be clearly understood. It runs thus:—

18, West Square, Southwark, S.E.,
Sept. 5, 1895.

My dear Beeby,—I have written two letters to you about the notes on "L. Cat.," and have torn them both up. The fact is, I do not know what to say about the paper, except that I could not print it in its present form. The remarks on *Sparganium* seem to imply that some people unnamed have "with deliberate intent" altered the nomenclature in that genus. Of course every alteration was made "with deliberate intent"—but I am certain (for I was at every meeting of the Committee) that there was no intention of annoying you, nor do I know who made the alteration.

As a matter of nomenclature it seems to me that *S. ramosum* Huds. should be recognised, just as similar names have been and are—but on this you have of course every right to your view. But if I were to publish your notes as they stand, they would lead to a long and angry discussion, which would have no good result. It seems to me that all through your tone is—shall I say captious?—witness the remark on what the "anonymous authority" would have done, on p. 3 [p. 2 in printed copy]—and the note on the obvious slip "*Juncus glaucus* Leers."

I should not be sorry to see "an independent catalogue of British plants," but, judging from the labour which the *revision* of the present one involved, I do not envy the man who undertakes its compilation!

Yours very truly,
James Britten.

We do not propose to reprint or comment upon Mr. Beeby's views as to nomenclature—which, indeed, we do not fully comprehend—for these are doubtless in the hands of every reader of the Journal, or can be obtained from the author, whose address is Burwood Park Road, Walton on Thames. But we must take exception to his statement that this Journal is "the organ of a clique," which "resents anything like interference with that *nomenclature by dogma*"—the italics are Mr. Beeby's—"which it is its aim to inculcate." Mr. Beeby, indeed, supplies the correction to this inaccurate view; for having adduced in support of it the absence from these pages of any report of Mr. Dyer's speech at the British Association last September, he mentions in a footnote that part of the address *was* printed, though "since [his postscript] was written." Why Mr. Beeby should nevertheless allow his original statement to stand we do not know; but as he seems to imply that our delay in printing Mr. Dyer's remarks was unreasonable, it may be well to state that they have been in type since December, although crowded out by the pressure of other matter. Moreover, we do not think that this is one of the subjects on which Mr. Dyer is entitled to speak *ex cathedrâ*.

The absence of any definite principle of nomenclature among the Kew school of botanists is notorious, and its justification by them on the score of "convenience" is equally well known. Even in their own publications their inconsistency is manifest. For example, in the *Flora of Tropical Africa*, the Decandollean rule (Art. 33), "Whatever be the form chosen, every specific name derived from the name of a person should begin with a capital letter" is observed; in the Botany of the *Biologia Centrali-Americana*, Mr. Hemsley follows the zoologists, and abandons capitals for such names altogether; while in the Kew lists and *Bulletin of Miscellaneous Information*, the genitive form has a capital, and the adjective a small initial. Such want of consistency, coupled with the disregard for accuracy in dating its publications referred to in our last number (p. 169), seems to us to disqualify the Kew botanists from speaking with authority on matters of nomenclature.

But nothing is further from the fact than Mr. Beeby's implication that only one view in nomenclature is allowed to be stated in this Journal. During the last few years, not only Mr. Jackson and the Editor, but Dr. Britton, Prof. Greene, Mr. Druce, Prof. Babington, Prof. L. H. Bailey, and Mr. Beeby himself, have had full liberty to state their views; and if earlier volumes be consulted, papers by Alphonse De Candolle, Asa Gray, Dr. Trimen, the Messrs. Groves and others will be found, testifying not only to the variety of opinions, but to the freedom with which their expression has been permitted. Not only so, but those who are familiar with our pages will note instances in which our own mode of printing names of species has been set aside in order to please individual contributors; and no later than last year at least one combination which the Editor considered improper was allowed to stand at the request of the botanist responsible for it.

Mr. Beeby raises one point regarding Mr. Jackson's *Index* which demands a word. Mr. Beeby quotes Mr. Druce as saying, "From the *Index* we learn that *Viola ericetorum* Schrader . . . is synonymous with *V. sylvestris*"; he then proceeds to cite Mr. Dyer's remark, "It is a mistake to suppose that [the *Index*] expresses any opinion as to the validity of the names themselves," and to refer to our own note to the same effect (Journ. Bot. 1894, 376), which, we venture to think, states the case more accurately than Mr. Dyer has done. But surely, unless the well-known sign " = " is to be taken in a "non-natural" sense, Mr. Druce is right and Mr. Dyer wrong. Here is the statement in question :—

"*ericetorum* Schrad. ex Link Enum. Hort. Berol. i. 240 = sylvestris."

If this does not bear out Mr. Druce's interpretation of it, what does it mean ? If it does not, as Mr. Dyer says, " express any opinion," what *does* it express ? Why is *ericetorum* italicized, and what does

"=" signify? and why—as Mr. Beeby tells us is our duty—should we be "very grateful to Mr. Dyer for his pronouncement," which is manifestly inaccurate, if typography and signs mean anything?

In the absence of any explanation, the statement "*ericetorum* = sylvestris" can only mean what Mr. Druce says it means. That such explanation is nowhere given in the *Index Kewensis* is no fault of Mr. Jackson; and those who are responsible for the suppression of the necessary introduction have, as we have before said, done their best to minimize the usefulness of the work.

Catalogue of the Mesozoic Plants of the Department of Geology, British Museum (Natural History). The Wealden Flora. Sec. II.—Gymnospermeæ. By A. C. Seward, M.A., F.G.S., University Lecturer in Botany, Cambridge. London, 1895. 8vo, pp. 259, tt. 20. Price 15s.

The author completes his account of the Wealden Flora as represented in the rich collections of the British Museum, which were lately so greatly extended by the purchase of the series collected by Mr. Rufford, of Hastings. The first part of the work, published a little more than a year ago, was noticed in detail in these pages (1894, p. 282). It dealt with the Cryptogamic plants, and the Flora is now completed by the descriptions of the Gymnosperms. No specimens have been seen that can be referred to Angiosperms. Mr. Seward describes eighteen species of *Cycadaceæ*, of which five are new; ten species of *Coniferæ*, of which five are new; and two new genera, each with a single species; making thirty species in all.

The Cycadean remains are grouped as leaves, scales, fruits, flowers, and trunks. He records ten species based on leaves; two of these are placed in *Cycadites*, one being new, though the points of distinction between it and *C. Roemeri* are somewhat unsatisfactory. "In view of the exceptionally large size of the Ecclesbourne specimens, and the satisfactory manner of preservation, it is better to adopt a new specific term." And then in reference to another species from Portugal described by Saporta, he says, "The figures of the frond fragments show a very distinct resemblance to the English specimens which I have referred to the new species *C. Saportæ*. Possibly the Portuguese and British plants should be placed in one species, but, for the present at least," they are kept separate, because "in the English fronds the pinnæ are somewhat stouter, the tips more sharply acuminate, and the general habit of the leaf appears to be rather stiffer than in *C. tenuisectus*." Two species of *Dioonites* are described, a *Nilssonia*, two belonging to *Otozamites* (of which one is new), and one to *Anomozamites*. Two forms of scales are figured, one spear-shaped, the other broad, and wisely no specific names are introduced for them. A fruit believed to be Cycadean is figured and described, but not named. For flowers there is a very singular fossil described as *Androstrobus Nathorsti*, the surface of two scales presenting depressions which the author believes to be due to the anthers. We would suggest that this fossil may have some affinity to the seed-like bodies which have been described under the name of *Oolithes sphæricus*, a specimen of which is figured on the same plate as the *Androstrobus*. To *Conites* is referred a previously-described species as *C. elegans*. Mr. Seward has some "hesitation in choosing the most suitable generic term for cone-like fossils of doubtful affinity"; he selects the genus of Sternberg, overlooking the anomaly that at p. 113 he has the genus representing supposed *Cycadeæ*, and at p. 222 representing *Coniferæ*, but he suggests that one may give "expression to any bias towards one or other group of plants by adding the word *Cycadeæ* or *Coniferæ* as qualifying epithets to the more comprehensive generic name." Under Cycadean trunks Mr. Seward describes *Bucklandia anomala*, a new species of *Fittonia*, three species of *Bennettites* (of which one is new), and a species of *Yatesia*. The views of Saporta we fear have been too hastily adopted by the author as to the generic identity of *Bennettites* and *Williamsonia*. The three doubtful genera which follow the *Cycadeæ* are first *Withamia*, a name proposed to replace *Cycadorachis* of Saporta, which was applied to an almost identical fossil, because "a purely provisional name like *Withamia* seems decidedly preferable for the present species, to one which in any way implies a definite botanical position. It is by no means clear how such a plant can well be included with *Cycadaceæ;* and we have no evidence of sufficient value to enable us to assign the species to any other particular group." The second genus, *Becklesia*, is based on specimens "difficult to describe with any completeness, on account of the fragmentary and imperfect nature of the material. So far as I have been able to discover, it is impossible to include these fossils in any known genus." The last of these doubtful genera is *Dichopteris*, which "it is safer, while expressing a bias towards the pteridophytic nature of the genus, to speak of it as occupying a somewhat doubtful position."

Of the *Coniferæ* four species are referred to *Pinites*, two of which are new. *P. Solmsi* is based on specimens which "closely resemble" a species of Gardner, "but in view of the much more perfect nature of the Rufford material, and the doubtful identity of Gardner's type, I have ventured to found a new species." *P. Ruffordi* is founded on a specimen of coniferous wood, a detailed description of which it is proposed to publish elsewhere. Two known species of *Sphenolepis* are figured; a new *Thuites*, based on a "single specimen of a leafy twig"; a species of *Pagiophyllum*, two species of *Brachyphyllum* (one being new), and a new species of *Conites*.

The two parts (would it not have been better to call them volumes, as they are independently paged, prefaced, and indexed?) of the Wealden Flora form a valuable addition to our knowledge of palæo-botany. Mr. Seward has done his work honestly and carefully, though we have often wished it had also been concisely. We hope that in future the author will not continue his present method of naming species, but follow that proposed by De Candolle and followed by most botanists. Mr. Dyer's address and the prefixed remarks of the Editor in the March number of this Journal will throw light on this subject. The name of each plant consists of a generic and a specific designation, and the author of the name is the botanist who first gave it to the plant. Mr. Seward deals very differently with the names of his fossils. Take as an example the plant whose name he gives as *Dioonites Brongniarti* (Mant.). This is how the synonymy is recorded:—1833 *Cycadites Brongniarti* Mantell, 1841 *Pterophyllum Brongniarti* Morris, 1842 *Hisingera Mantellii* Miquel, 1844 *Nilssonia Brongniarti* Brown, 1849 *Zamites Brongniarti* Brongniart, 1850 *Nilssonia Brongniarti* Unger, *Nilssonia Brongniarti* Bronn and Römer, 1852 *Nilssonia Brongniarti* Ettingshausen (this is a strange innovation: the species is Bronn's and should be quoted as Bronn in Unger, *l. c.* &c.), 1856 *Nilssonia Brongniarti* Borneman 1871 *Dioonites Brongniarti* Schenk., 1874 *Dioonites Brongniarti* Schimper, *Pterophyllum Brongniarti* Topley, *Dioonites Brongniarti* Renault, *Dioonites Kotoei* Yokoyama. In this list the author of the name is neglected, and each writer who has used the name is treated as if he were its author. For another species the author employs the name *Bennettites* (*Cycadeoidea*) *Saxbyanus* (Brown). Brown called it *Cycadites Saxbyanus;* the author of the trinominal is Mr. Seward. It is very desirable to adopt a recognized system and to follow it. But from the quotations given in this notice it must be evident that the author is not in accord with botanists in his treatment of existing names. When it is a matter of securing greater fitness by a new name as compared with the existing name, no finality can be reached in nomenclature. Would that no one were allowed to touch Systematic Botany until he had mastered the principles and become acquainted with some of the generally accepted rules of botanical nomenclature!

W. C.

Norges Arktiske Flora. By J. M. Norman. Parts I. and II. Pp. 760, 442. Kristiana. 1894–5. (With a Map.)

This is a work which must have cost the author an immense amount of time and patience. The only book on British Botany which (so far as I know) can be at all compared with it is Mr. Watson's *Geographical Distribution of British Plants* (1843); but that has not one-sixth of the work in it that Dr. Norman's has.

The author defines Arctic Norway as Norway north of the Arctic "Polar" Circle. The introductory matter runs to forty-five pages, and consists of a list of the seven divisions (lettered A to G) into which he divides the country; these are again divided into 25 districts, and again into about 220 sub-districts, with about 650 localities, which, however, consist in some cases of the north or south slope of certain mountains. The actual stations for plants represent about 1500 habitats—or, roughly, some 48,000 for *Ranunculaceæ* to *Pyrolaceæ;* a list of the sub-districts with their latitude, height in mètres (corrected for temperature); a similar list with the dates (and notes of the exposure, &c.) when observed; and a list of heights, in which 1526 mètres seems to be the highest. Although these heights are given in mètres, in the body of the work the author adds particulars of the heights of the localities also in Norwegian feet.

To show his treatment of the species I will take *Ranunculus acris* L. (as a common British species); for this he gives some 472 separate localities. As a rarer species *Linnæa borealis*, with 303 separate localities; and as a rare one *Phyllodoce cærulea*, with 277 separate localities. The only (in Mr. Watson's work) one we can compare with these is *Ranunculus acris*, for which, in the whole of England and Scotland, he gives 107 localities, or centres. With the localities, Dr. Norman gives a large amount of notes of various kinds—of the flowering (expressed thus "$^3/_7$ 83"), &c. Thus are treated the species (it should be here remarked that he has selected "special plants") from *Ranunculus glacialis* L. to *Pyrola uniflora* L. In the second part he takes the same species, and treats them in a condensed manner (with paginal references to the first part) from the standpoints of horizontal distribution; vertical distribution; topographical statistics; characters of environment; flowering, as to time, and length of time in bloom, size, &c., of flowers; and remarks.

I suppose it would not be far wrong to take these parts as representing about half the Flora (in European Floras the medium part is *generally* the Compositæ); if so, it means that some 2400 pages will be required to represent the plants selected from the Norwegian Arctic Flora. We certainly have nothing that can be compared with this work in completeness as to localities. I doubt much whether, if all the local Floras of Britain could be collated, there would then be such a collection of habitats for the rarer plants—certainly not for the common ones, as our Floras often merely say "in all the districts," or, "common over the whole county," both generally misleading. But Dr. Norman treats the common species as exactly as the rare ones, and it may be doubted whether there is another work in existence that can show such fulness of detail.

The map shows the twenty-five districts into which the author has divided Arctic Norway; it would have been better to have shown the district boundaries in red, as, the map being deeply shaded with contour lines, it is not easy at a glance to follow the dotted lines.

ARTHUR BENNETT.

Elements of Botany. By J. Y. BERGEN, A.M. Ginn, Boston, U.S.A. 1896. 8vo, pp. viii, 275, 57; with 212 figs.

THIS little work is an expansion of notes prepared for a half-year course in botany at the Boston English High School. It is one of the best of its kind we remember to have seen, and in Boston and elsewhere in the United States will doubtless be welcomed by teachers of botany, to whom we can recommend it as an accurate and well-arranged guide for their students. But it falls under the heading "Foreign," from the point of view of this Journal. While it is eminently of advantage to cite as illustrations, and use for practical work, the common indigenous plants, such a plan heavily discounts the use of the book in a country where those plants are neither indigenous nor common. As, moreover, the scientific names are almost invariably omitted, the student and teacher alike may be puzzled by the first line of the first chapter where the injunction to germinate squash-seeds is given. The four o'clock seed, beggar's ticks, and the like, will prove to be additional stumbling-blocks. It is therefore impossible to recommend the book for use in this country.

The author has made a happy combination of theory and practice. Innumerable simple experiments are suggested throughout, by working out which the student gradually acquires a fair elementary knowledge of the structure and functions of the seed-plant and its parts. The book begins with the seed and its germination, and the learner is led from the seedling to the adult plant with its root, stem, buds, leaves, and flowers; fertilization of the latter and the formation of fruit bring him back to the starting-point, the seed. Then follows a useful chapter on the struggle for existence, in which we learn, among other things, that if a single morning-glory were only allowed a free hand in multiplication, there would result in the seventh year 729,000,000,000,000,000,000 plants.

About twenty-five pages are given to the study of some types of flowerless plants; while the second part constitutes a small flora, including the commoner seed-plants which are likely to be in flower in the Eastern United States at the time of year when the book will be in use.

A. B. R.

Botaniker-Adressbuch. Sammlung von Namen und Adressen der lebenden Botaniker aller Länder, der botanischen Gärten und der die Botanik pflegenden Institute, Gesellschaften und periodischen Publicationen. Herausgegeben von J. Dörfler. Wien, 1896. 8vo, pp. xii, 292.

Books of this kind, even when incomplete, are useful; and Herr Dörfler's *Botaniker-Adressbuch* cannot be said to err on the side of incompleteness. It will probably surprise our readers to know that we have more than 380 botanists in the United Kingdom; but the gratification which such news imparts is modified by the fact that the claims of many to be included in the list are not very apparent. Excluding those who are no longer with us, such as Mr. Blomefield and Dr. Buchanan White, and subtracting the names of scientific booksellers, presidents of local societies, horticulturists, gardeners, Kew foremen and clerks, there still remain a large number who here appear for the first time in a list of botanists. Full as it is, however, the enumeration might be extended: Mr. James Groves, Mr. G. S. West, and Mr. J. B. Carruthers, for example, find no place in it.

The occupations and qualifications of those included are various and at times puzzling. Mr. Alfred Ackroyd, for instance, whose name stands first on the list, is described as "Nomenclator of Bury Botanical Association," and as this information is supplied by himself, it is no doubt accurate, although we cannot even guess what are the duties of the post. They seem to be onerous, for there is also a "Vice-Nomenclator," and the Association is also represented on the list by its "Senior Steward," whose name as printed—"Haslam"—suggests that he is a member of the peerage; by its Secretary and Librarian, and other officers. There are two "gentlemen" on the list, one "meat purveyor," one "bishop-assistant," one "life member of the British Association," one "pawnbrocker," and one "county analist."

As we remarked some time since, when reviewing another book of this kind, it is to be regretted that the compiler does not submit his proofs to some representative of each country for correction—failing any one better, we would gladly look them through for England. By so doing, he would avoid many of the misprints which are otherwise inevitable. Herr Dörfler has, on the whole, succeeded very well with his English names, but "Lirencester," "the Growe," "Triniti," and the like would at once have caught the eye of an English proof-reader, who would also have corrected the statement that Sir Joseph Hooker is "Director of the Royal Botanic Gardens." But the book is a most useful compilation, and, indeed, is indispensable to those botanists who have an extensive correspondence.

ARTICLES IN JOURNALS.

Annals of Botany (March).—J. E. Humphrey, 'Development of seed in *Scitamineæ*' (4 pl.).—D. P. Penhallow, *Nematophyton Ortoni*, sp. n. (1 pl.). — B. M. Davis, 'Fertilization of *Batrachospermum*' (2 pl.). — R. J. Harvey Gibson, 'Anatomy of *Selaginella*' (1 pl.).—H. Wagner, '*Cystopus candidus*.' — P. Groom, 'Relation between calcium and conduct of carbohydrates in plants.'—R. W. Phillips, '*Saccorhiza bulbosa* & *Alaria esculenta*.' — M. Hartog, 'Cytology of *Saprolegnia*.'—E. Sargant, 'Embryo-sac of *Lilium Martagon*.'

Annals of Scottish Nat. Hist. (April). — G. C. Druce, Arthur Bennett, & E. S. Marshall, 'The London Catalogue.'—A. Bennett, 'Records of Scottish Plants for 1895.' — W. Barclay, 'Scottish Roses.'

Bot. Centralblatt (No. 13). — W. Froemblung, 'Anatomisch-systematische Untersuchung von Blatt und Axe der Crotoneen und Euphyllantheen.' — (No. 14). J. H. Wakker, 'Die indirecte Bekämpfung der Serehkrankheit des Zuckerrohrs auf Java.' — (No. 15). H. F. Jonkman, 'Embryogenie von *Angiopteris* und *Marattia*.' — (No. 16). C. Schilberszky, 'Zur Morphologie und Systematik der Myxomyceten' (1 pl.).

Bot. Gazette (Mar. 28). — H. M. Richards, 'Cultures of Exobasidia' (1 pl.). — B. M. Davis, 'Development of Cystocarp of

Champia parvula' (2 pl.).—E. J. Hill, 'Flora of Chicago.'—J. H. Schaffner, 'Embryo-sac of *Alisma Plantago*' (2 pl.).—F. L. Scribner. 'New N. American Grasses' (*Pringleochloa*, gen. nov.: *Chlorideæ*). —W. A. Setchell & W. J. V. Osterhout, 'Aqueous media for preserving Algæ.' — J. W. Harshberger, 'Purposes of Ethno-botany.' —G. V. Nash, 'Notes on Grasses.'

Bot. Notiser (häft. 2).—Th. Wulff, 'Some remarks on the flora of the Isle of Wight.' — H. G. Simmons, 'Några bidrag till Färöarnes flora.' — A. M. Lindman, '*Polygonum aviculare* f. *litoralis*.'— I. Persson, 'Bidrag till Vestergötlands och Bohnsläns moss-flora.'— L. M. Neuman, 'Anteckningar från en botanik resa till Bornholm.'

Bot. Zeitung (Ap. 16). — O. Kaiser, 'Ueber Kerntheilungen der Characeen.'

Bull. de l'Herb. Boissier (Mar.).— J. Bornmüller, 'Zur Flora Tessins.'—A. Tonduz, 'Herborisations au Costa Rica.' — J. Freyn, 'Orientalische Pflanzenarten.' — A. Baldacci, 'Una corsa botanica nell' Isola di Santa Maura.' — R. Chodat, *Polygala Galpini*. — G. Schweinfurth, 'Sammlung Arabisch-Æthiopischer Pflanzen.'

Bull. Torrey Bot. Club (Mar. 29).—W. E. Wheelock, 'N. American *Saxifragaceæ*.' — G. N. Best, 'N. American Thuidiums' (2 pl.).— F. V. Coville, 'Three Editions of Emory's Report.' — E. P. Bicknell, *Carex typhinoides*.—G. V. Nash, 'Florida Plants.'

Gardeners' Chronicle (Ap. 11). — G. Nicholson, *Ulmus alata* (fig. 66).—R. J. Lynch, 'The Allies of the Cineraria' (figs. 67–69). —(Ap. 25). F. Kränzlin, *Cœlogyne uniflora* Lindl.

Journal de Botanique (Ap. 1). — C. Sauvageau, *Ectocarpus virescens*. — (Ap. 16). L. Sauvan, 'Localisation des principes actifs dans quelques végétaux.' — (Ap. 16). C. Sauvageau, *Ectocarpus confervoides*. — A. Franchet, 'J. M. Delavay' (born at Abondance, Haute-Savoie, 1834; died Yunnan, Dec. 20, 1895).— —. Hue, 'Lichens d'Aix-les-Bains.'

Malpighia (fasc. 3, 4).—J. Camus, 'Un herbier composé en 1838 pour Victor Emmanuel.' — L. Buscalioni, 'Studii sui cristalli di ossalato di calcio' (concluded).—R. F. Solla, 'Osservazioni botaniche durante una escursione in provincia di Cosenza.'

Nuovo Giorn. Bot. Ital. (Ap. 15). — S. Sommier, 'Risultati botanici di un viaggio all' Ob inferiore.'— Id., '*Ophrys bombyliflora* × *tenthredenifera*.' — A. Preda, 'Contributo allo studio delle Narcissee italiane.' — C. Massalongo, 'Nuova miscellanea teratologica.'

Oesterr. Bot. Zeitschrift (April).—R. Wettstein, *Gentiana tenella* und *G. nana*.—F. Arnold, 'Lichenologische Fragmente.'—J. Freyn, 'Plantæ Karoanæ Dahuricæ.'—V. Schiffner, 'Cryptogamæ Karoanæ Dahuricæ.' — C. Laubmann, 'Zur Laubmoosflora von Tirol '— J. Tobisch, 'Zur Kenntnis der Pilzflora von Kärnten.'

BOOK-NOTES, NEWS, &c.

The University of Glasgow has conferred the honorary degree of LL.D. upon Mr. Dyer. Glasgow folk seem unaware of Mr. Dyer's claims to this distinction; the *Evening Citizen* of April 4th says:—"Mr. Thistleton (*sic*) Dyer, of Kew Botanic Gardens, has considerable standing in horticultural circles, but the likelihood is that he was first heard of outside of these a week ago, when he was taken somewhat savagely to task, in the columns of the *Saturday Review*, for his policy of uprooting many of the clumps of trees with which the Gardens are studded." Such is fame!

We learn from Madras papers that the late Mr. M. A. Lawson, whose death we recorded last month, formed a very good herbarium at Ootacamund, which will probably be removed to Madras. He did much to re-establish the Government cinchona plantations on the Nilgiris, and succeeded in establishing a system by which quinine could be sold in the villages at a very cheap rate—an object which he had had in view for many years before its accomplishment was possible. Mr. Lawson was born at Seaton Carew, Co. Durham, on Jan. 20th, 1840.

The last part (vol. iv. pt. 2) of the *Transactions* of the Natural History Society of Glasgow contains papers on the occurrence of *Cladium jamaicense* in Bute, by J. Ballantyne; on the Flora of Palestine, by the Rev. H. Macmillan; on the Botany of the West of Scotland, by P. Ewing; on *Cystopteris montana* in Stirlingshire, by A. Somerville; on Measurements of Trees, by R. M'Kay and J. Renwick (two plates); and other botanical notes. We note that another botanical "Dr. Robert Brown" takes part in the proceedings of the Society.

We are glad to announce the issue of vol. vi. part 1, of the continuation of the *Flora Capensis*. Dr. Dyer, who undertook to edit the work in 1872, is to be congratulated on this result of his labours, of which we hope to speak more at length on a future occasion. This part contains the *Irideæ* and the beginning of the *Amaryllideæ*, and is entirely the work of Mr. J. G. Baker.

The third part of Dr. Bretschneider's valuable and learned *Botanicon Sinicum* (Hongkong and Singapore, Kelly & Walsh) has just reached us. It is devoted to "botanical investigations into the materia medica of the ancient Chinese," and forms a volume of over 600 pages.

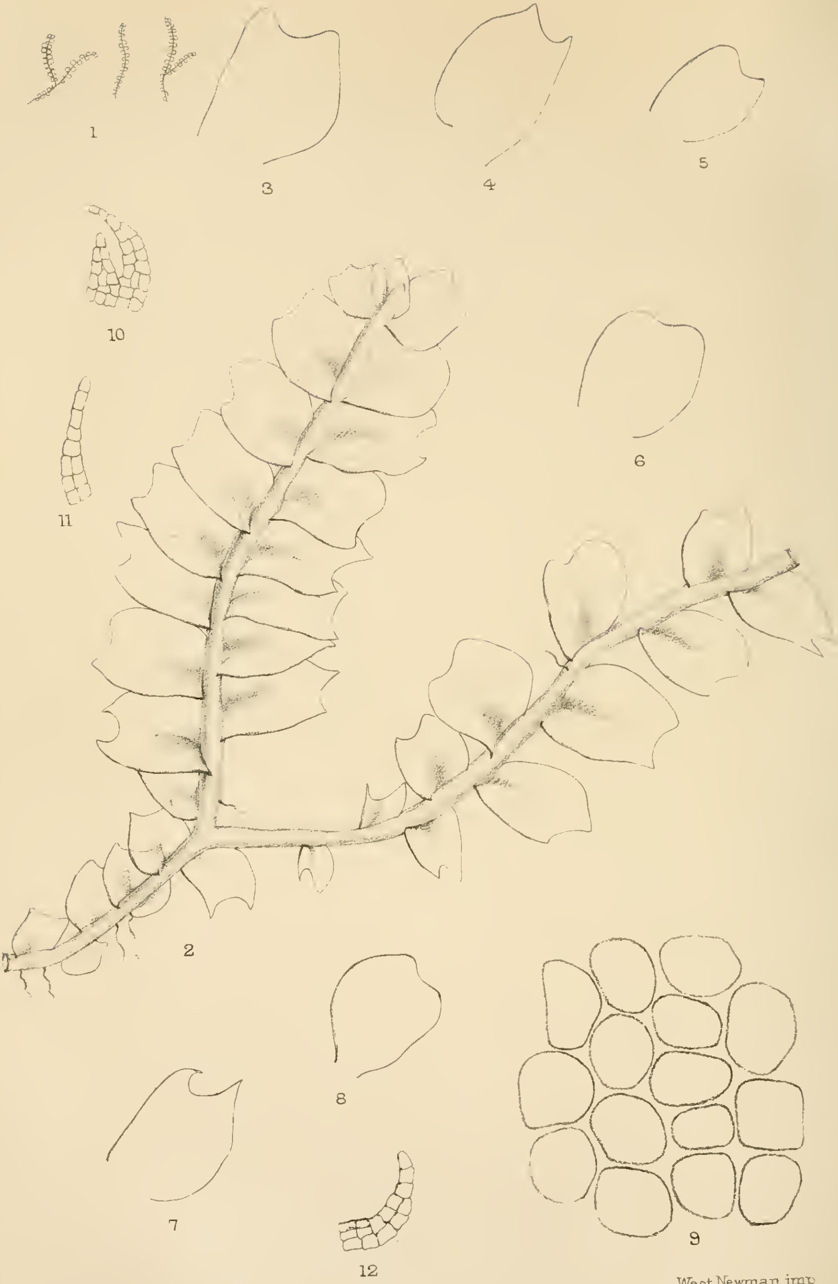
The *Gardeners' Chronicle* for April 25th has a long notice of the collection of water-colour drawings of Australian plants by Mrs. F. C. Rowan, now on exhibition at Messrs. Dowdeswell's Galleries in Bond Street. "Many of the plants," says the *Chronicle*, "are new to botanists, and come from parts of Australia hitherto not trodden by the white man"; and the preface to the catalogue states that they have been "obtained at great personal risk, and nearly always under most trying circumstances." The drawings are very beautiful, and merit the praise bestowed upon them. The *Chronicle* includes *Arauja albens* among the "New South Wales plants better known in English gardens." As to its occurrence in gardens, the editor of the *Chronicle* is in a position to speak with authority, though we note that *Arauja* is not included in Mr. Nicholson's *Dictionary of Gardening;* but we are surprised to learn that the plant grows in New South Wales. It may be that the hitherto untrodden parts of Australia will revolutionize our notions of plant-distribution; for other South American species—e. g. *Mitraria coccinea*—were among the selection of her drawings which Mrs. Rowan brought to the British Museum to be named, although they are not included among those exhibited.

We learn from Herr V. F. Brotherus, of Helsingfors, in a letter that has just come to hand, that he has started on a journey into Central Asia. "I am going," he says, "viâ Samarkand and Tashkend to Thian Shan for the purpose of bryological researches in the highlands of Issikkoul." The district is a new and promising one, and in the hands of Herr Brotherus is likely to yield rich results. The traveller acquired an excellent training for his present enterprise during his botanical expedition to the Caucasus some years ago. We wish him every success.

Mr. Thorild Wulff, junior, an enthusiastic young Swedish botanist who visited England in 1894, publishes in the *Botanisk Notiser* an account of his visit to the Isle of Wight. He describes and gives names to some of the dwarf forms familiar to those who know the Freshwater downs—*Scabiosa Columbaria* f. *nana*, *Carlina vulgaris* f. *humillima* (a "most distinguished variety"), and *Campanula rotundifolia* f. *pygmæa;* and identifies another with a previously described plant—*Pimpinella Saxifraga* f. *arenaria* N. Bryhn.

Harry Corbyn Levinge, who died at his residence, Knockdrin Castle, Mullingar, on March 11th, in his sixty-eighth year, was for a long period Secretary to the Government of Bengal (Public Works), during which time he devoted all his leisure to natural history. His collection of Indian ferns, more particularly from Sikkim, Kashmir, and the Nilgherries, was very extensive, and he had intended to work it up on his return home, when it was unfortunately destroyed by fire: Mr. Levinge then devoted himself to the Irish flora. Notes from him have appeared in this Journal from time to time—the first in 1885: his most important contribution being that on *Neotinea intacta* (Journ. Bot. 1892, 194). In the *Irish Naturalist* he published three papers on Westmeath plants, which added greatly to our knowledge of the botany of that county. He added *Chara denudata* to the flora of the British Isles. Mr. Levinge formed an excellent herbarium of British plants, which he has bequeathed to the Dublin Museum of Science and Art. We are indebted to *Nature* of April 23rd and the *Irish Naturalist* for April for most of the above information.

Tab. 358.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W H.P. del.
R. Morgan lith.

West Newman imp

Plagiochila Stableri.

A NEW HEPATIC.

By W. H. Pearson.

(Plate 358.)

Plagiochila Stableri, n. sp. Dioicous, loosely cæspitose, small, pale to brownish green in colour. Stems creeping, simple or irregularly branched; branches ascending, radiculose; rootlets few, single, white. Leaves imbricate or distant, bifarious, alternate, horizontal or patent-divergent, largest near the middle of the stem, very slightly or not at all decurrent antically, plane or slightly concave, oblong-quadrate, oval or subcuneate, bidentate to about one-fourth, retuse or entire, margin quite entire; texture somewhat thick; cells from moderate to largish in size, roundish-quadrate; walls thick, angles thickened. Stipules evident, simple or bifid, segments subulate.

Dimensions. Stems ½ in. long, with leaves 1·25 mm. wide; diameter of stem 0·15 mm.; leaves 0·7 × 0·5 mm., 0·5 × 0·5 mm., 0·7 × 0·45 mm.; segments 0·2 mm., 0·6 × 0·5 mm., 0·7 × 0·55 mm.; segments 0·1 mm.; cells 0·04 × 0·045 mm., 0·04 × 0·04 mm., 0·035 × 0·04 mm., 0·035 × 0·035 mm.; stipules 0·225 × 0·05 mm., 0·2 × 0·08 mm., 0·2 × 0·04 mm.

Hab. On rocks near Fall, Rydal Park, Rydal, Westmoreland, *Mr. George Stabler*, Sept. 1877.

Obs. Although the small flagelliferous varieties of *P. spinulosa* (Dicks.) and *P. punctata* Tayl. are numerous, *P. Stableri* cannot be confounded with any of them, the almost horizontal insertion of the bidentate, retuse or entire leaves, which are nearly plane, and their much larger cells at once distinguish the species.

P. tridenticulata Tayl., which has usually bidentate leaves, oblong-oval in shape, with a very narrow base and small cells, is very distinct.

P. exigua Tayl. has very decurrent leaves of a different shape, with an extremely narrow base; cells much smaller.

Leptoscyphus interruptus (Nees), with which it agrees somewhat, in the insertion of its leaves, is a much more robust plant, with usually entire leaves and less evident stipules.

Description of Plate 358.—Fig. 1. Plants, natural size. 2. Plant, antical view, × 24. 3–8. Leaves, × 31. 9. Portion of leaf, × 290. 10–12. Stipules, × 85.

ARRUDA'S BRAZILIAN PLANTS.

By James Britten, F.L.S.

Having had occasion to look up one of Arruda's names, I found that a considerable number of the species standing in Mr. Jackson's *Index* on his authority had never been correlated, and that in some cases even the systematic position of his genera was doubtfully or inaccurately indicated. It seemed to me worth while to identify as far as possible these obscure plants by an examination of the decriptions, local names, and other indications given by Arruda, and by references to works in which they have been cited. Some identifications, overlooked by Mr. Jackson, may be found in Martius' *Flora Brasiliensis*, others are given by monographers; and I have found considerable help in Mr. Miers's valuable MS. "Catalogue of the Woods of Brazil," now in the Department of Botany.

The plants described by Arruda have found their way into botanical literature through the Appendix to Henry Koster's *Travels in Brazil* (1816). This English traveller, who was of Portuguese descent, finds no place in the *Dictionary of National Biography*, but Larousse gives a short account of him. He was born at Liverpool in 1793. His delicate health rendered a sojourn in warm climates necessary, and in November, 1809, he sailed for Brazil, in which country he remained until April, 1811. Having spent the summer in England, he went back to Brazil, where he settled down as a planter. Circumstances rendered it necessary for Koster to return home at the end of 1815. He then set to work to write an account of his travels, in which he had the help of Robert Southey, then Poet Laureate. His book is extremely interesting, and shows the author—who was only twenty-two when he wrote it —to have been a man of much promise. Koster visited much of the country then little known to Europeans; and his notes on the region, the people, and their customs, are of considerable value. He learnt Portuguese, and soon became at home among the people. "England is my country," he says at the close of his narrative, "but my native soil is Portugal: I belong to both, and whether in the company of Englishmen, of Portugueze, or of Brazilians, I feel equally among my countrymen." It is manifest from his book that the character ascribed to him in Larousse was well deserved:—"Doué d'un esprit judicieux et d'un caractère affable, il a considéré les hommes et les choses sans prévention et sans aigreur." Koster went to Brazil a third time, but did not return: he died at Pernambuco in 1820.

The only information I have been able to find about Arruda is the following note by Koster (*Travels*, p. 49):—

"On the 24th of October [1810], I delivered a letter of introduction which I obtained at Recife, to the Dr. Manuel Arruda da Camara. This interesting person lay at Goiana very ill of dropsy, brought on by residing in aguish districts. He was an enterprising man, and had always been an enthusiast in botany. His superior abilities would have caused him to be caressed by a provident Government, when one of this description is establishing itself in an uncultivated but improving country. He showed me some of his drawings, which I thought well executed. I never again had an opportunity of seeing him; for when I returned from Seara, I had not time to enquire and seek for him, and he died before my second voyage to Pernambuco. He was forming a Flora Pernambucana, which he did not live to complete."

In the Appendix to his *Travels*, Koster translated such portions as "may be interesting to English readers" of Arruda's two pamphlets—"Dissertação sobre as plantas do Brazil, que podem dar linhos proprios para meritos usos da sociedade, e suprir a falta do Canhamo," Rio de Janeiro, 1810, 8vo, pp. 49 (on the fibrous plants of Brazil, which may supply the place of hemp)—and another, published in the same year, but not mentioned by Pritzel, the title of which Koster translates as "An Essay on the utility of establishing gardens in the principal provinces of Brazil for the cultivation of new plants." Pritzel mentions an earlier memoir (Lisbon, 1799) on the cultivation of cotton.

Arruda's most important work was *Centuria Plantarum Pernambucensium*, which he did not live to complete. It included a collection of drawings, some of them executed under his direction by Joam Ribeiro (whom Pritzel calls "Martinus"), to which Arruda supplied names and sometimes descriptions. References to these are appended to all the new plants described in the two pamphlets already mentioned; and some account of them was given in a publication (at Rio) by Allemão in 1846, consisting of one quarto leaf and plate, and entitled "Apparecimento de uma collecção de desenhos do Doutor Manoel Arruda da Camara." Allemão says that the collection had been entrusted to him to publish, and that he was also desirous of printing a memoir of Arruda. The plate and description are of *Cochlospermum insigne*, on which Arruda had proposed to form a new genus, *Azeredia*, in honour of José Joaquim de Azeredo Coutinho, Bishop of Pernambuco from 1798 to 1802.

Joam Ribeiro Pessoa de Mello Montenegro, who has been referred to above, was professor of drawing in the seminary at Olinda. Arruda dedicated to him his genus *Ribirea* (= *Hancornia*): "he is worthy of this honour," he says, "not only from having attempted to introduce into this captaincy the cultivation of some useful exotic plants, but for the curious and philosophic examination which he has made respecting the wonderful phenomenon of the manner of the fructification of the *mangabeira* plant [*Hancornia*], which will be found in my *Centuria Plant. Pern.*" (Koster, p. 499). He died, according to Pritzel, in 1816. Koster met this priest at Itamaraca, and the account he gives of him (p. 266) is so pleasant that I venture to transcribe it:—

"Among the visitors at the vicarage was Joam Ribeiro Pessoa de Mello Montenegro, professor of drawing to the seminary of Olinda, and the friend and disciple of Dr. Manoel Arruda da Camara. This priest, during his stay at Itamaraca, crossed over to the mainland to say mass at the village of Camboa every Sunday and holiday. I accompanied him on one of these occasions, and we were paddled over in a canoe. We entered the cottage of a man of colour, the chief person of the place; a hammock was hanging in the room, and into this my companion threw himself, and three or four children of the house quickly came to him, one or two of whom he took into the hammock to play with. The females made their appearance to greet him upon his arrival; he was a favourite seemingly with all parties, great and small. Indeed I never met with any one who possessed more pleasing manners. He is generally beloved wherever he is known, but by the lower orders of people more especially, he is quite adored. I was long acquainted with him, both before and after the time of which I speak, and I never heard him make use of a harsh word to any one; his manner and his tones of voice always indicated that goodness in him greatly predominated. A free mulatto man, of the name of Bertolomeu, once said to me in speaking of this priest, 'If he sees a child fall, he runs and picks it up and cleans its face, and this he does not do because any one is in sight to see him act in this manner, but because his heart so inclines him.' It is much to be lamented that his exertions have not been directed to obtaining a situation in which his excellent qualities might have a wider field for display: but he is satisfied with what has been given to him."

In the following list I have arranged alphabetically under their Latin names the species enumerated on Arruda's authority in Koster's Appendix, omitting the well-known plants which are included therein. I have quoted the vernacular names and such portions of the descriptions as are necessary for my purpose. In the Appendix, "Arrud. Cent. Plant. Pern." follows each name. The mark ! after a work cited specifies that Arruda's name is cited therein.

Acantacaryx Pinguis. *Piqui.* Koster, p. 491.

Mr. Jackson refers *Acantacaryx* to *Caryocar*, and *A. Pinguis* is doubtless identical with *C. brasiliensis* Willd.: the properties ascribed to the two trees are similar, and Miers gives "Pequiá" as the name of the latter in Bahia: Arruda's "Piqui" "is the delight of the inhabitants of Searà [Cearà] and Piauhi." Endlicher (Gen. p. 1076) prints the name *Acanthocaryx*, which Jackson (who does not note its identity with *Acantacaryx*) further modifies into *Acanthocarya.* Thus is synonymy increased.

Agave vivipara Lin. Syst. Veg. *Caroata-açu* or *Piteira.* Koster, 481.

According to Miers and *Index Kewensis*, this is not *A. vivipara* L., but = *Furcræa agavephylla* Brot.—a plant which in the *Index* is subsequently (under *Furcræa*) identified with *F. cubensis* Vent. Brotero's description occurs in Roem. & Schult. Syst. vii. (not vi. as in Ind. Kew.) 731, where it is given as from "*Linn. Transact.* March, 1823." Neither Mr. Jackson nor I have been able to trace this reference.

Amyris Pernambucensis. *Almecega.* Koster, 500.

This may certainly be referred to *Protium:* the name "Almecega" is common to several species, and in this case probably = *P. heptaphyllum β. brasiliense* Engl.

ARECA BACABA. *Bacaba.* Koster, 490.

= *Œnocarpus Bakaba* Mart. Hist. Nat. Palm. ii. 24. The vernacular name is cited by Martius (*l.c.*, and Syst. Mat. Med. 15), by Miers, and by other authors.

ARISTOLOCHIA GRANDIFLORA. *Papo de Peru.* Koster, 499.

Martius (Mat. Med. Bras. 107) identifies this with *A. cymbifera* Mart. & Zucc.

ARUM LINIFERUM. *Aninga.* Koster, 483.

= *Montrichardia linifera* H. Schott, Araceen Betreff. 5 (1854)!

BIGNONIA TINCTORIA. *Piranga.* Koster, 497.

= *B. Chica* Humb. & Bonpl. Martius (Mat. Med. Bras. 124) cites the same vernacular name, and his account of the uses of the plant tallies with that of Arruda.

BOMBAX VENTRICOSA. *Barriguda* or *Sumaûma.* Koster, 489.

= *Chorisia ventricosa* Nees & Mart. in Nov. Act. Leopold.-Carol. xi. 102!

BOMBAX MEDITERRANEA. *Embiratanha.* (*l. c.*)

Perhaps = the preceding, to which Miers assigns the vernacular name.

BROMELIA VARIEGATA. *Caroa.* Koster, 475.

= *Neoglaziovia variegata* Mez in Fl. Bras. iii. 3, 427!

BROMELIA SAGENARIA. *Crauata de Rede.* Koster, 478.

= *Ananas Sagenaria* Schultes fil. in Roem. & Schult. Syst. vii. 1286!

= *A. sativus* var. *bracteatus* Mez, *l. c.* 293!

BROMELIA MURICATA. *Ananas da Agulha.* Koster, 481.

= *A. muricatus* Schultes fil. *l. c.* 1287!

= *A. sativus* var. *muricatus* Mez, *l. c.*!

CARLOTEA FORMOSISSIMA. *Carapitaia.*

CARLOTEA SPECIOSA. *Bilros.*

"Two beautiful species of a new genus, which I have dedicated to H.R.H. the Princess of Brazil: the roots of these plants are tuberous, abounding with soft and nutritive fecula, which has afforded assistance to the people of the Sertam of Pajaù in times of drought. These plants are worthy of being cultivated not only from their utility, but for the purpose of ornamenting gardens, their flowers being umbellate, crimson, and very beautiful."—Koster, 493.

Neither Miers nor Allemão throws any light on the local names, and Jackson says, "Gen. ignot." There can be little doubt, however, that the genus is to be referred to *Hippeastrum*, although the species can hardly be identified. Seubert (in Fl. Bras. iii. i. 146) suggests that *C. speciosa* = *Zephyranthes candida* Herb., but this cannot be, as the latter has solitary white flowers.

CISSUS TINCTORIA. *Anil trepador.* Koster, 496.

Jackson gives *C. tinctoria* Arrud. as distinct from *C. tinctoria* Mart. They are, however, clearly identical: Arruda (*l. c.*) and Martius (Mat. Med. Bras. 126) give the same vernacular name, and this is also cited by Eichler in Fl. Bras. xiv. ii. 218, where the plant is identified with *Vitis sicyoides* Baker—the only Brazilian vine used in dyeing.

Cocos ventricosa. *Macaaba* or *Maucaba*. Koster, 485.

This certainly = *Acrocomia sclerocarpa* Mart. The name "Macauba" is assigned to this only by Martius (Hist. Nat. Palm. ii. 66), Miers (Cat. Woods), Drude (in Mart. Fl. Bras. iii. ii. 201), Gardner (Travels, 182), &c., and the descriptions of the tree and its uses agree entirely with Arruda's account of his *Cocos ventricosa*, which Miers quotes as a synonym of *A. sclerocarpa*.

Convolvulus mechoacan. *Batata de purga*.

"The true *Convolvulus mechoacan* is different from the other in leaf, branch, and fruit; of this I have given the description in my Centuria of new plants."—Arruda in Koster, Trav. 498.

Mr. Jackson probably considers this identical with *C. Mechoacan* (misprinted *Mechoacana* in Ind. Kew.) Vitman Summa, i. 434, which he says = *Ipomœa Jalapa*. I am not concerned to discuss this synonymy, but I think it is clear that Arruda's Brazilian plant is different from the Mexican species. "Batata de purga" of the Brazilians is cited by Martius (Mat. Med. Bras. 78), Meisner (in Fl. Bras. vii. 211), and others as = *Ipomœa operculata* Mart. & Spix; and I see no reason to object to this determination for Arruda's plant.

Corypha cerifera. *Carnauba* or *Carnaiba*. Koster, 494.

= *Copernicia cerifera* Mart. Hist. Palm. Bras. 242!

Dorstenia rotundifolia. *Contra-herva*. [498.
Dorstenia Pernambucana. *Contra-herva de folha longana*. Koster,

Arruda gives no description of either of these, and they are treated as doubtful by Martius (Mat. Med. Bras. 107) and Miquel (in Fl. Bras. iv. i. 170). A "quid?" should follow these names in *Index Kewensis*.

Geoffroya spinosa. *Umari*. "Jacq. Stirp. Americ." Koster, 497.

The Pernambuco plant which Arruda describes under this name is, as he suggests, not identical with Jacquin's West Indian species; Martius later (Syst. Mat. Med. Bras. 63) employed the same name for the "Umari," which is *G. superba* Humb. & Bonpl., as stated by Gardner (Trav. in Brazil, 133), who gives an account of its use by the natives agreeing with that of Arruda; and by Allemão (Coll. Med. Bras. 31). *G. superba* is the only Brazilian species of the genus. Mr. Jackson correctly gives the distribution of *G. spinosa* as "Ind. occ.," but makes no allusion to the Brazilian plant, which must stand as—

G. spinosa Arruda (1810) ex Koster, Trav. 497 = superba.

Hibiscus Pernambucensis. *Guaxuma do Mangue*. Koster, 487.

Mr. Jackson retains this name, and also *H. pernambucensis* Bertol. His entries are—

"pernambucensis, *Arruda, in Koster, Trav. Braz.* 487.
pernambucensis, *Bertol. in Opusc. Scient.* iv. (1823) 229 = præc. ?"

It is evident from the descriptions of each that these are identical, and that they must be referred to *H. tiliaceus* L., under which

Bertoloni's plant has already been placed by Gürke in Fl. Bras. xii. iii. 568. This, by the way, should date from 1820 (Bertol. Excerpta, 13).

IPECACUANHA OFFICINALIS. *Ipecacuanha preta.* Koster, 497.

= *Psychotria Ipecacuanha* Stokes, Mat. Med. i. 365 (1812). The *Index Kewensis* has needlessly increased synonymy by including Arruda's vernacular names: thus—

"*Branca*, Arruda, Diss. ex Koster, Trav. Braz. 497 = Ionidium Ipecacuanha.

"*Preta*, Arruda, *l. c.* = P. Ipecacuanha."

KOANOPHYLLON TINCTORIA. *Anil de Pernambuco.* Koster, 495.

= *Eupatorium læve* DC. "This is a shrub which grows to the height of twelve feet or more. It is of the class syngenesia; the leaves are from two to three inches in length, and of proportionate breadth; it is enough to soak a piece of cotton cloth in its juice for it to become green, and from this colour it is changed to blue by the absorption of the oxygen of atmospheric air."—Koster, *l. c.* The only composite yielding blue dye mentioned in Fl. Bras. is *Eupatorium læve* DC., of which it is said, "foliis tincturam offert cæruleum, ei *Indigoferæ Anilis* similem" (*l. c.* vi. iv. 412): and with this Arruda's description agrees. It is curious that Hahn distributed this plant (Pl. de la Martinique, n. 396) as "*Eupatorium tinctorium* L."—a name which I do not find elsewhere.

KORDELESTRIS SYMPHILITICA. *Caroba.* [500.
KORDELESTRIS UNDULATA. *Caroba miuda*, or *Casco de cavallo.* Koster,

The former = *Jacaranda procera* Spreng., *fide* Mart. Mat. Med. Bras. 66: the latter is transferred by Steudel to *Jacaranda;* A. P. De Candolle (Prodr. ix. 233) says of it, "nomine tantum nota."

LINHAREA TINCTORIA. *Catinga Branca.* Koster, 493.

Miers (Cat. Woods) identifies this with *Nectandra Gardneri* Meissn. Arruda describes another species, "Canella do Mato, *Linharia aromatica*," which I cannot identify. The spelling *Linharea* is the correct one, as he says, "I have given the name *Linharea* in memory of D. Rodrigo de Souza Coutinho, Conde de Linhares, the cultivator and protector of letters" (p. 493).

MELEAGRINEX PERNAMBUCANA. *Pitombeira.* "Quid?" Jacks. Index.

= *Sapindus esculentus* St. Hil.; *fide* Allemão, Brev. Not. 27 (same local name quoted), and Miers, Cat. Woods. "If turkeys eat of the kernels they die immediately; from this circumstance I took the name of the genus, of which I have only found two species."—Koster, *l. c.* 496.

MIMOSA VIRGINALIS. *Barbatimam.* Koster, 500.

= *Stryphnodendron Barbatimam* Mart. The local name, according to Miers and Allemão, Brev. Not., is "Barbatimão," and this spelling is used for the specific name by Bentham in Fl. Bras. xv. ii. 284: Martius, however, first published the species as *S. Barbatimam* in *Flora*, xx. Beibl. ii. 17 (1837). I think *Mimosa cochliacarpos* B. A. Gomes,* in Mem. Acad. Scienc. Lisboa, iii. (Mem. dos Correspondentes, p. 34, t. 4 (*cochleacarpos*) is certainly identical with this. Jackson (who spells it *cochliocarpos*) refers it to *Pithecolobium Auaremotemo* Mart.; but Martius himself when publishing that species (in *Flora*, xx. Beibl. ii, 115) cited Gomes's plant as a doubtful synonym, and in this he is followed by Bentham (in Fl. Bras. xv. ii. 435). Martius, Allemão, and Bentham all agree in confining "Barbatimão" to *Stryphnodendron Barbatimam* Mart.: the Brazilian name for the *Pithecolobium* is "Auaremo-temo"—a name which Gomes cites from Piso as synonymous with "Barbatimão," but I think incorrectly.

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* In *Index Kewensis* the name is usually spelt Gomez, but incorrectly.

MORONOBEA ESCULENTA. *Bacuri.* Koster, 490.

In the *Index Kewensis* this is identified with *M. coccinea* Aubl., which "= [M.] grandiflora, Symphonia globulifera." Martius when establishing *Platonia* (Nov. Gen. & Sp. iii. 169) cited Arruda's plant as identical with his genus, and this determination is borne out by later authors—*e.g.* Engler in Fl. Bras. xii. i. 467, Peckolt, Hist. Pl. Alim. Gozo, iv. 6 (1878), and by Miers and Allemão, who assign the name "Bacubi" exclusively to *Platonia insignis.*

MYRTUS CARYOPHYLATA. *Cravo do Maranham.* Koster, 490.

No doubt = *M. caryophyllata* Vell. Fl. Flum. 216, v. t. 70 = *M. Pseudo-caryophyllus* Gomes in Mem. Acad. Lisb. iii. (Mem. Corresp. 92) = *Eugenia Pseudo-caryophyllus* DC. Prodr. iii. 282. Jackson does not quote Vellozo's name, perhaps thinking it identical with *M. caryophyllata* L., which, however, is an Old World plant.

MYRTUS SCABRA. *Mandapuca.* Koster, 491.

PLERAGINA* RUFA. *Oiti Coroiá.*

PLERAGINA ODORATA. *Oiti da Praia.*

PLERAGINA UMBROSISSIMA. *Oiticica* or *Catingueira.* Koster, 499.

Miers identifies *P. rufa* with *Couepia grandiflora* Benth., and *P. odorata* with *C. Uiti* Benth., citing in each case from his own memoranda the same local name; and Sir Joseph Hooker (Fl. Bras. xiv. ii. 76, note) gives the same identification, which has been overlooked in the *Index Kewensis.* *P. umbrosissima* is not so easy to determine. Arruda's description is as follows:—

"The third species (*oiticica*) is peculiar to the Sertoens, where it grows upon the borders of rivers and rivulets. It rises to the height of 50 or 60 ft.; its branches are so diffuse, and double so much, that they nearly reach the ground, forming a spacious cope. The fruit is an oblong drupe of two inches or more in length, and of half an inch in thickness; it always retains its green colour, even when ripe. The kernel is not hard like the kernels of the two preceding species, but is ligneous and flexible, and can easily be broken; it is covered with a layer of astringent pulp. The almond is a seed composed of two oily cotyledons of a disagreeable taste, but abounding in oil, of which some use is now made."—Koster, 500. Sir Joseph Hooker (*l. c.*) says, "Oiti-cica, *Pl. umbrosissimam* e deserto Pernambucano ad descriptas species reducere non audeo."

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* This is one of the few cases in which Mr. Jackson has made a curious slip. In *Index Kewensis* he has—

"PLEGERINA, Arruda, ex Koster, Trav. Bras. 499 (1816), inc. sed.
Pleragina, Steud. Nom. ed. i. 632 (1821)."

Plegerina is printed neither by Arruda nor Steudel, and, if ever cited, must be attributed to Jackson in *Index Kewensis.*

Psidium pigmeum. *Marangaba.* Koster, 492.

"This is a species of *goiaba* plant which does not attain more than two or three feet in height; it abounds in the *chapada* of the Serra Araripe of Cariri Novo."—*l. c.* This may be *P. humile* Vell., but in the absence of material it cannot be decided, especially as the name "Marangaba" is not taken up by Miers or in the books. It seems, however, to be known to travellers: Gardner (Trav. in Brazil, 193) says he found "on the top of the Serra a species called Marangaba; it is the *Psidium pigmeum* of Arruda, a shrub from one to two feet high, the fruit of which is about the size of a gooseberry, and is greatly sought after on account of its delicious flavour, which resembles that of the strawberry."

Mr. Jackson cites "*pygmæum* Vell. ex Steud. = pigmæum," and this suggests a remark on the way in which bogus names get into circulation. For, in the first place, Steudel does not say "pygmaeum Vell.," but "pygmaeum Arruda," and by so doing he merely means to correct Arruda's spelling—just as Mr. Jackson himself does when he writes "pigmaeum Arruda," for Arruda wrote "pigmeum."* I do not say that Steudel's spelling should not have been quoted, but I am curious to know what will be done in the future with "pygmaeum Vell." Vellozo never used the name: will future index-makers have to enter "pygmaeum Vell. ex Jacks."?

Ribeirea sorbilis. *Mangabeira.* Koster, 499.

I have already cited Arruda's account of his dedication of the plant. Jackson doubtfully refers it to *Rosaceæ*, but Müller (Fl. Bras. vi. i. 186), Miers, and others identify it with *Hancornia speciosa* B. A. Gomes in Mem. Acad. Scienc. Lisboa, iii. (Mem. dos Corresp. 51, t. i.), and this identification is clearly correct. If the date of the publication of Gomes's paper were, as accepted by Jackson and by authors generally, 1812, Arruda's name *Ribeirea* (1810) would have to replace *Hancornia* (1812). But it appears that Gomes's paper appeared first as an independent publication in Lisbon in 1803,† and was subsequently reprinted in the *Memorias.*‡ The date to be assigned to *Hancornia* must therefore be 1803, not 1812 as given in *Index Kewensis.*

Hancornia commemorates an Englishman who finds no place in the *Biogr. Index Brit. Botanists*, and it may be worth while to transcribe what Gomes says about him:—"*Hancorniam* vocavi in memoriam Philippi Hancornii, natione Angli, et apud Lusitanos in Navali militia benemeriti Divisionis Ducis, quippe qui non modo Rerum Naturalium studiosus est, sed etiam studiosorum fautor, eoque maximè quod dum Classi, qua Medici partes agebam, anno 1797 in Brasiliam missæ Præfectus erat, Observationes Botanico-Medicas illic instituendi opportunitates benevole mihi largitus est, reversusque Olysiponem hisce adhuc redigendis favere prosecutus fuit, oblatis nonnullis haud vulgaribus Botanices libris, munere mihi maxime occasionis ergo acceptissimo."—*l. c.* 51.

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* I have before expressed my opinion (Journ. Bot. 1894, 375–6), which experience confirms, that Mr. Jackson should have given the names as spelt by their authors, and should not have attempted to make them conform to more accurate usage.

† It originally appeared in two parts, which explains the two series of numbers on the plates in the *Memorias.*

‡ See Pritzel, no. 3465; Colmeiro, *Bot. Penins. Hispano-Lusitana*, 199.

SKOLEMORA PERNAMBUCENSIS. *Angelim.*

"The fruit of this tree possesses the strongest vegetable anthelminthic properties with which I am acquainted. It is necessary to be careful in the use of it, for if the dose is too large, the medicine will attack the nervous system, and produce convulsions. The common dose is one-fourth part of a seed for an adult. I know of three species of this plant."—Koster, 498.

Angelim is a general name for several species of *Andira* (Brev. not. 5, and Miers Cat. Woods), and *Skolemora* is clearly synonymous with that genus: *S. pernambucensis*, judging from the properties described = *A. anthelminthica* Benth. or *A. vermifuga* Mart.

SPONDIA TUBEROSA. *Imbuzeiro.* Koster, 496.

Jackson enters this as "sp. dub." It is *Spondias venulosa* Mart., as will be seen by comparing Arruda's description of the use made of its fruit—"With [the juicy pulp] and milk, curds, and sugar, a much esteemed mess is made, called *imbuzada*"—with that given by Engler of *S. purpurea** in Fl. Bras. xii. ii. 415—"pulpa dulci et aromatica donati, cum saccharo et lacte in Brasilia media inter secundarum mensium delicia, locum habent (Imbusada)." Gardner (Travels, 231) gives a similar account. The name (as *Spondias tuberosa*) occurs in Sald. Pl. Alim. Brés. 18 (1867); and in Peckolt's Hist. Pl. Alim. de Gozo, 54 (1874).

UNONA CARMINATIVA. *Embira Vermelha.* Koster, 489.
= *Xylopia sericea* St. Hil. Pl. No. Bras. t. 33!

IRISH PLANTS OBSERVED IN JULY, 1895.

By Rev. E. S. MARSHALL, M.A., F.L.S., & W. A. SHOOLBRED, M.R.C.S.

THE species mentioned below were collected between July 2nd and 16th. An enforced stay of two or three hours at Ferryhill, opposite Waterford, in Co. Kilkenny (Dist. 3 of *Cybele Hibernica*), enabled us to secure several interesting brambles on the hills above the Suir;

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* Although referred to *S. purpurea*, it is clear from the context that the statement about the Brazilian use of the fruit refers to the var. *β. venulosa*, as the type does not occur in Brazil. Engler subsequently (DC. Mon. Phan. iv. 245) restored this to specific rank; the name cited by Jackson from Engler should stand in *Index Kewensis* as "*S. venulosa* Mart. Syn. Mat. Med. 77 (1843)."

a few things were also identified on our railway journey northwards through Co. Clare (Dist. 6). While waiting for a carriage to take us to Maam (Dist. 8), where we had three days' botanizing, we made some gatherings at Oughterard, well known as a good collecting ground. Our principal work was done from Clonbur, a hamlet on the borders of W. Galway (Dist. 8) and E. Mayo (Dist. 9), near the S.W. corner of Lough Mask, the S. end of which is entirely bordered by limestone, producing several rarities; expeditions were made to Cong and its neighbourhood, as well as to the mountains near Maamtrasna, which—on the map—look very inviting, but are extremely poor in alpine vegetation, like all the hills which we examined in this district.

Our best thanks for help in identifying the doubtful gatherings are due to Messrs. Arthur Bennett, H. Groves, and Rev. E. F. Linton; Prof. Crépin kindly examined a few roses. Rev. W. Moyle Rogers and Dr. Focke have taken a great deal of trouble with the *Rubi*, several of which appear to be new to the Irish Flora; those which are (so far as we can ascertain) unrecorded for the various districts are distinguished by an asterisk. With this exception, we have not attempted to publish "new county records"; it is now about twenty-four years since the Supplement to *Cybele Hibernica* was issued, and much good work has been done since then.

Thalictrum collinum Wallr. 8. By the river at Oughterard, very luxuriant; also on the N. shore of "the narrow lake," a western arm of L. Mask. 9. Limestone rocks, S. of L. Mask.

Ranunculus Drouetii Godr. About Cong, both in Distr. 8 and 9. —*R. heterophyllus* Web. 8. In a ditch between Clonbur and L. Mask.—*R. Lingua* L. 9. In a swamp opposite Ashford House, Cong.

Fumaria confusa Jord. 8. A few plants were found in a potato-field at Oughterard.

Nasturtium officinale R. Br. var. *microphyllum* (Reichb.). 8. Near the river at Maam; also in a swamp near Clonbur.—*N. palustre* L. 8, 9. Moist places, S. of L. Mask.

Subularia aquatica L. 8. In Lough Coolin, near Clonbur.

Brassica Rapa L. var. *Briggsii* H. C. Watson? 8, 9. A small annual, from 2 to 9 in. high, occurs locally in great abundance on shingly limestone shores S. of L. Mask, looking truly wild. No doubt the dry season and exposed situation are mainly accountable for its dwarf habit. There is at present no cultivated land within half a mile. Mr. Groves remarks that the flowers do not look like *Briggsii*.

Coronopus didymus Sm. and *C. Ruellii* All. 3. Ferrybank; the former seemed to be a mere casual.

Lepidium hirtum Sm. (*L. Smithii* Hooker). 3. Ferrybank.

Viola silvestris Reich. 8. Woods on limestone in the Ashford House demesne, near Cong.—*V. ericetorum* Schrader. 8. Maam.

Polygala oxyptera Reich. 8. Sparingly on a dry bank near Maam. — *P. serpyllacea* Weihe. 8. Common on the heaths about Maam; also seen near Clonbur, in Districts 8 and 9.

Lychnis Githago Scop. Apparently scarce; only seen in one spot near Clonbur (8).

Stellaria palustris Retz. 8. In a swamp near Clonbur, within a few yards of the Mayo boundary, but apparently not crossing the line.

Arenaria serpyllifolia L. 9. Both the type and well-marked *A. leptoclados* Guss. grow on the limestone, S. of L. Mask.

Sagina nodosa Fenzl. 8, 9. Damp hollows, S. of L. Mask.

Hypericum Androsæmum L. 8. Maam; Clonbur. 9. Clonbur. — *H. dubium* Leers. 8. Maam; frequent to the W. of Clonbur. 9. About Clonbur and Cong.

Malva moschata L. 3. Hill above Ferrybank. 9. Cong; very scarce, but not looking like an escape. *M. sylvestris* L. has the appearance of an outcast at Oughterard.

Geranium lucidum L. 8, 9. Plentiful about Clonbur and Cong, on the limestone. A curious prostrate limestone form (or variety) of *G. Robertianum* L., with glabrous calyx, is plentiful in Dist. 8 and 9, S. of L. Mask. "Seemingly a departure from type towards the var. *rubricaule ?*, or perhaps near *G. semiglabrum* Jord.; but I have not specimens" (Bennett *in litt.*).

Euonymus europæus L. 8, 9. Remarkably abundant in the woods between Clonbur and Cong.

Rhamnus catharticus L. and *R. Frangula* L. 8, 9. On limestone near L. Mask, the latter being quite prostrate. *Acer Pseudo-platanus* L. also occurs (in Dist. 9), quite naturalized, the seeds having been wind-borne from plantations about Clonbur.

Ononis repens L. 9. Cong; a spinous form, seen only in one very restricted station.

Melilotus officinalis Lam. 3. On a bank near the railway-station at Ferrybank; possibly native.

Lotus uliginosus Schkuhr. 8. Moist meadows, Maam.

Vicia hirsuta Gray. 8. Near Clonbur.—*V. Cracca* L. var. *incana* Thuill. 8, 9. On limestone, about Clonbur.

Prunus Avium L. 3. Near Ferrybank; probably bird-sown.—*P. Cerasus* L. 8. In hedges near Clonbur; doubtless introduced.

Rubus plicatus Wh. & N. 8, 9*. On limestone, S. of L. Mask. Owing to the exceptional drought, it was very stunted.—Var. *hemistemon* (P. J. Muell.). 8*. Damp ground by the river at Maam, not far from the inn. — *R. Lindleianus* Lees. 3*. Ferrybank. 8*, 9*. On limestone, S. of L. Mask.—*R. erythrinus* Genev. 9. On limestone, S. of L. Mask; a little altered by soil and situation, and showing some approach towards *R. incurvatus* Bab. New to Ireland. —*R. rhamnifolius* Wh. & N. 8. Maam and Clonbur.—*R. pulcherrimus* Neum. 8*. Maam and Clonbur. 9*. Cong. — *R. dumnoniensis* Bab. 3. Ferrybank. 8. Maam. The latter was a stunted form (much recalling *rusticanus* in appearance) with extraordinarily large petals, of which Dr. Focke wrote: "Exactly the same small state of the plant I saw in W. Cornwall." New to Ireland. — *R. argentatus* P. J. Muell. 9. A form of this, slightly "off type," but much resembling the Herefordshire specimens in the "Set" (No. 30), occurs near Cong. New to Ireland. — *R. silvaticus* Wh. & N. 8*. Maam; a small form. — *Obs.* A very handsome bramble, allied to

R. mollissimus and *R. Schlechtendalii*, grows plentifully at Maam, and was also noticed at Oughterard and (probably) Cong. It has flowers of a beautiful bright pink, large and showy, stamens much exceeding the styles, and a very villous panicle; the leaves are dark dull green and rather rugose above, softly hairy on the under side. Both Dr. Focke and Mr. Rogers incline to think it an undescribed variety or species; but further observation is requisite. — *R. Sprengelii* Weihe. 3. In good quantity on a furze-clad hill above Ferrybank; mostly rather starved, but otherwise quite typical New to Ireland.—*R. hirtifolius* Muell. & Wirtg., var. *danicus* Focke (*teste* Focke). 3*. Plentiful at Ferrybank. Mr. Rogers considers this form nearer to *R. leucostachys*, which it much resembles in the stem and prickles; but the two are very distinct-looking, when growing together. A striking plant, found at Oughterard, Maam, Clonbur, and Cong, which Mr. Rogers (at first) thought to be *R. hirtifolius*, tending towards *R. silvaticus*, would rather be placed by Dr. Focke under *R. Salteri;* it is, however, certainly not the same as the Aconbury specimens of the latter (No. 35) in the Set, and we are inclined to believe that it is at least varietally distinct from both. The *Rubus*-flora of W. Ireland is evidently a rich one, and it is quite probable that some distinct "Atlantic type" forms may occur, which will also be found in the Spanish Peninsula.—*R. pyramidalis* Kalt. 8*. Locally abundant near Clonbur, especially at the foot of Kilbride Mountain. 9*. Wooded banks of Lough Corrib, near Cong. — *R. leucostachys* Schleich. 3*. Ferrybank; abundant. 8. Maam, Oughterard, and Clonbur. 9. Clonbur and Cong.—*R. mucronatus* Blox. 9*. Wooded banks of L. Corrib, near Cong; a hybrid with *R. pyramidalis* also occurs. A Ferrybank (Dist. 3) bramble is placed as a variety of this by Dr. Focke, but seems very different from the ordinary British forms. — *R. Borreri* Bell Salter. 8*. Maam; "A very interesting extension of its distribution. I have it from Cos. Dublin and Armagh" (Rogers *in litt.*).—*R. Babingtonii* Bell Salter. 8. Between Clonbur and Mount Gable. Slightly different from the plant of Kent and Surrey, but placed here without doubt by both our authorities. New to Ireland. —*R. Koehleri* Wh. & N. 8*. Between Clonbur and Mount Gable; "very near the type" (Focke). In some respects approaching *R. Marshalli*. Oughterard; untypical in its pink petals, &c. — Var. *cognatus* (N. E. Br.). 8*. On the W. side of L. Mask, in two places about a mile apart, three or four miles N. of Clonbur; also on limestone S. of the lake, in Dist. 9*. Not quite identical with the Surrey form, but hardly distinguishable from it. — *R. dumetorum* Wh. & N. 3. Ferrybank. 8. Oughterard; Clonbur. Chiefly, if not entirely, the var. *ferox* Weihe.—*R. corylifolius* Sm. 3*. Ferrybank; good *sublustris*. 9*. Cong; not typical. — Var. *cyclophyllus* Lindeb. 9*. Roadside, about half-way between Cong and Clonbur. —*R. cæsius* L., var. *tenuis* Bell Salter. 9*. On limestone, S. of L. Mask. — *R. saxatilis* L. Abundant, and fruiting freely, on the limestone about L. Mask, in both counties.

Potentilla procumbens Sibth. 8. Maam; Clonbur, &c. 9. On limestone, S. of L. Mask. — *P. procumbens × silvestris*. 8, 9. In several spots about Clonbur.

Alchemilla vulgaris L., var. *filicaulis* (Buser). 8. In a pasture at Clonbur, sparingly; the only form observed.

Agrimonia odorata Miller. 8. On the N. shore of "the narrow lake," L. Mask; locally abundant.

Rosa pimpinellifolia L., forma *spinosissima* (L.). 9. S. side of Lough Mask; very scarce. The type occurs in great plenty. — *R. pimpinellifolia* × *tomentosa*. 9. Two colonies were found, about a mile apart, S. of L. Mask, growing with both parents; they appear to come under *R. involuta* Sm., var. *Doniana* (Woods).

Pyrus Aria Ehrh. 8, 9. About Clonbur; scarce, but looking wild. — *P. Malus* L., var. *acerba* DC. was also seen here, in both counties.

Saxifraga stellaris L. 8. Cliffs above Lough-na-dirk-more, Maamtrasna, very scarce.

Ribes Grossularia. 9. S. of L. Mask; far from houses, but doubtless bird-sown.

Sedum Telephium L., var. *Fabaria* H. C. Watson. 8. Oughterard and Maam; clearly an escape in both places.

Callitriche stagnalis Scop., var. *serpyllifolia* Lönnroth. 8. Maam, on mud.—*C. hamulata* Kuetz. 8. Maam; Clonbur.

Epilobium obscurum × *palustre*. 8. In a ditch near the railway station, Oughterard, together with the parents.

Apium nodiflorum Reich. fil., var. *ocreatum* Bab. 8. Streamlet flowing into the S. side of L. Mask.

Sium erectum Huds. 9. Swamp opposite Ashford House, Cong.

Ægopodium Podagraria L. 8. Oughterard; near houses.

Pimpinella major Huds. 9. About four miles on the road from Cong to Ballinrobe.

Scandix Pecten-Veneris L. 3. Ferrybank.

Rubia peregrina L. 9. S. side of L. Mask; apparently scarce.

Galium verum L. 9. A pubescent form with greenish yellow flowers is not uncommon on the limestone S. of L. Mask. *G. boreale* is also plentiful, but the two species did not appear to hybridize. — *G. palustre* L., var. *Witheringii* (Sm.). 8. Maam; Clonbur. 9. Cong.

Filago germanica L. 8. W. of Clonbur. — *F. minima* Fr. 8. Plentiful, but stunted, on the sandy shore of L. Mask at Maamtrasna. "Not recorded from the West of Ireland" (*Cybele*).

Gnaphalium sylvaticum L. 8, 9. In several places about Clonbur and Cong.

Bidens tripartita L. 8. Oughterard; Clonbur. 9. Cong. We did not meet with *B. cernua*.

Anthemis nobilis L. 8. N. shore of "the narrow lake," L. Mask.

Chrysanthemum Leucanthemum L. 9. A curious form of limestone rocks, with very narrow leaves, grows at Cong and S. of L. Mask.

Senecio aquaticus Huds., var. *pinnatifidus* Gren. & Godr. 8. Moist meadows at Maam; also near Clonbur. 9. Cong. Probably a common form in the west.

Carlina vulgaris L. 6. Plentiful on the limestone in N. Clare, and about Clonbur and Cong (Dist. 8, 9).

Arctium minus Bernh. (segregate). 8. Maam; Clonbur. 9. Cong.

Cnicus arvensis Hoffm., var. *horridus* (Adam). 3. Hill-pasture above Ferrybank.

Centaurea Scabiosa L. 6. Abundant on the railway-banks about Ennis, Gort, &c. 9. Cong.

Crepis paludosa Moench. 8. Oughterard; Maam; Clonbur. 9. Cong.

Hieracium iricum Fr. 8. Mountains near Maam (only one plant seen). Locally abundant on Mount Gable, near Clonbur.

Leontodon hirtus L. 8, 9. On the limestone, S. of L. Mask, frequent. *Taraxacum palustre* DC. also occurs in the damp hollows.

Sonchus arvensis L., var. *angustifolia* Meyer. 9. Low limestone cliffs at the S.E. end of L. Mask.

Lobelia Dortmanna L. 8. L. Corrib, near Maam; L. Coolin; W. side of L. Mask. 9. L. Corrib, near Cong.

Jasione montana L., var. *major* Koch. 8. Cliffs of Mount Gable.

Campanula rotundifolia L., var. *lancifolia* Mert. & Koch. 9. On limestone S. of L. Mask; the larger specimens were fairly characteristic, but as a rule it was smaller than the variety as described. —Var. *hirta* Rich. On the more exposed parts of the same rock, in both counties, but sparingly.

Samolus Valerandi L. Frequent near Loughs Corrib and Mask; seen in both Dist. 8 and 9.

Blackstonia perfoliata Huds. 6. Abundant on the railway-banks in N. Clare. 8. On limestone, near Clonbur.

Gentiana Amarella L. 9. S. of L. Mask; apparently scarce.

Myosotis repens G. Don. 8. About Maam and Clonbur, in hill-swamps.

Convolvulus arvensis L. 9. Near Cong; only seen at one spot.

Solanum Dulcamara L. 3. Ferrybank. 9. Between Clonbur and Cong.

Scrophularia aquatica L., var. *cinerea* Dum. 8. Oughterard. 9. Cong.—*S. nodosa* L. A few plants with pale green, concolorous (? albino) flowers were found near Maam.

Veronica Anagallis-aquatica L., var. *anagalliformis* Boreau. 8, 9. Frequent about Cong and Clonbur; inflorescence densely glandular, and flowers usually pink.

Bartsia Odontites Huds. 3. Ferrybank. 9. Cong—*B. verna* Reich. in both cases.

Rhinanthus Crista-galli L., var. *fallax* Wimm. & Grab. 8. Between Clonbur and Mount Gable.

Utricularia ? neglecta Lehm. 9. In a southern prolongation of L. Mask, just within Co. Mayo; small and flowerless, but looking quite different from flowerless *U. vulgaris*, which grew in a pool about half a mile further east.

Verbena officinalis L. 8. Clonbur. 9. Roadsides about Cong, frequent.

Origanum vulgare L. 8, 9. Common on the limestone around Cong.

Scutellaria galericulata L. 9. In crevices of the limestone, S. of L. Mask.

Plantago maritima L. 8, 9. S. shores of L. Mask.

Atriplex patula L. 8. Oughterard. — Vars. *erecta* Huds. and *angustifolia* (Sm.). 3. Ferrybank.

Polygonum Convolvulus L., var. *subalatum* V. Hall. 8. Oughterard.—*P. lapathifolium* L. 8. Clonbur. 9. Cong.— *P. maculatum* Trim. & Dyer. 3. A few plants on a rubbish-heap at Ferrybank.

Oxyria digyna Hill. 8. Cliffs about Lough-na-dirk-more, Maamtrasna.

Salix aurita × *cinerea*. 8. By the river at Maam.—*S. aurita* × *repens*. 8. Near Maam. — *S. repens* L. 8, 9. The form *S. argentea* Sm. is beautifully represented on the limestone S. of L. Mask, but shades off into other forms. The apparent absence of *S. Caprea* from all the places we visited is strange.

Juniperus nana Willd. 8. By Lough-na-dirk-more, Maamtrasna; scarce.

Elodea canadensis Michx. This is now abundant in Loughs Corrib and Mask.

Neottia Nidus-avis Rich. 8. Woods in the Ashford House demesne, near Cong; *Listera ovata* also occurs there.

Epipactis atrorubens Schultz. 8. Sparingly in a rocky valley on the Clonbur side of Cong, just within Co. Galway.

Habenaria albida R. Br. 8. Rocky pastures at the foot of Mount Gable. — *H. viridis* R. Br. 9. S. of L. Mask; scarce. —*H. bifolia* R. Br. 8. Near Maam. *H. chloroleuca* appeared to be common in that part of Mayo and Galway.

Iris Pseudacorus L. Only seen in flower at Maam, where it was the type, and not the more usual British var. *acoriformis*.

Sparganium ramosum Huds., var, *microcarpum* Neum. 8, 9. Frequent about Maam and Clonbur; the only form seen.—*S. affine* Schnitzl. 8. Plentiful at the E. end of L. Coolin; here and there on the W. side of L. Mask. 9. S.E. corner of L. Mask.

Potamogeton sparganiifolius Læstad. We could only find a single patch of this in the Maam river, but the quantity may vary with the season; there was no trace of inflorescence on July 5th. The appearance of the living plant strongly suggests that it may be a deep-water state of *P. polygonifolius* Pourr., which ascends to 1300 ft. in that neighbourhood. — *P. heterophyllus* Schreb. 8, 9. Not uncommon in L. Mask, and in streams about Cong. — *P. angustifolius* Presl (*P. Zizii* Roth). 8. The type is locally abundant on the N.W. side of L. Corrib, near Maam. Here, and in pools and streams about Maam (Dist. 8 and 9), occurs a somewhat different plant, which Mr. Bennett names "*P. angustifolius*, forma = *P. borealis* Tiselius *olim*." — *P. prælongus* Wulfen. 8. W. side of L. Mask, about three miles N. of Clonbur. 9. S.E. corner of L. Mask. Apparently quite local. — *P. filiformis* Nolte. 8. A single fruiting spike of this very rare Irish species was found floating near the shore, close to the first-named station for *P. prælongus;* further search was made, but unsuccessfully.

Zannichellia palustris L. 9. Mill-pond at Cong.

Eriocaulon septangulare With. 8. Abundant on the N.W. side of Lough Corrib; in "the narrow lake," L. Mask; L. Coolin; Lough-na-dirk-beg, Maamtrasna.

Scirpus pauciflorus Lightf. 8. Near the S. shore of L. Mask, Clonbur.

Rhyncospora fusca R. & S. 8. Very plentiful about Maam; also below Kilbride Mountain, W. of L. Mask.

Cladium jamaicense Crantz. 8, 9. Frequent on the S. side of L. Mask.

Carex disticha Huds. 9. Swamp opposite Ashford House, Cong. —*C. paniculata* L. 8. Near Maam and Clonbur; only two or three plants in each station.—*C. remota* L. 8. Clonbur.—*C. curta* Good. In a swamp between Maam and L. Corrib, growing on tussocks of *C. Hudsoni* Ar. Benn. (*C. stricta* Good.), which also occurs about Clonbur, both in Mayo and Galway.—*C. aquatilis* Wahlenb., var. *elatior* Bab. Plentiful for twenty or thirty yards by the Maam river, about a quarter of a mile above the bridge. An interesting extension of its known Irish range. —*C. Goodenovii* J. Gay, var. *juncella* (Fr.). 9. Swamp opposite Ashford House, Cong, in two somewhat distinct-looking forms. — *C. flacca* Schreb. 8, 9. A form with very hispid fruit is abundant on the limestone S. of L. Mask. — *C. limosa* L. 8. Very common on the heaths near Maam. — *C. lævigata* Sm. 8. Between Clonbur and Mount Gable.—*C. fulva* Good. 8, 9. Plentiful about Maam; also noted from Clonbur and Cong. — *C. chrysites* Link (*C. flava* var. *cyperoides* Marsson). 8, 9. N.W. shore of L. Corrib, and in two or three places on the S. side of L. Mask. We think that this should be maintained as a distinct species. —*C. flava* × *fulva*. 8. N.W. side of L. Corrib; also about two miles north of Maam. 9. S. side of L. Mask. The parents in all these cases grew together. — *C. filiformis* L. 8. Swamp between Maam and L. Corrib; swamp near Clonbur. 9. Close to L. Corrib, near Cong.—*C. hirta* L. 8. In a valley near Cong, just in Co. Galway; very luxuriant. — *C. Pseudo-cyperus* L. 8. Several fine tufts were noticed in ditches by the railway between Galway and Moycullen.— *C. rostrata* Stokes. 8. A remarkably tall, stout form, with broad, flat leaves, looking (at a little distance) like some other species, is not uncommon near Cong; it much resembles the figure of the Co. Armagh *C. rhynchophysa*, though the spikelets are a good deal more slender. A similar plant from Co. Westmeath has been determined by Mr. Bennett as *C. ampullacea* forma *planifolia* Norman, *Fl. Arct. Norvegiæ*.—*C. vesicaria* L. 8, 9. In damp places S. of L. Mask; rare.

Arrhenatherum avenaceum Beauv. The var. *nodosum* Reichb. was noticed in one spot near Clonbur.

Sesleria cærulea Ard. 8, 9. On the limestone S. of L. Mask; too much withered to show whether the type or not. Associated with this was *Koeleria cristata* Pers., var. *gracilis* (Boreau).

Melica uniflora Retz. 8, 9. Cong; not plentiful.

Festuca rigida Kunth. 8, 9. Not unfrequent about Cong and Clonbur. — *F. Myuros* L. 3. Wall-top, Ferrybank. — *F. ovina* L., var. *capillata* Hackel. 8. Heaths near Maam; abundant.

Hymenophyllum unilaterale Bory. 8. Streamlet on the Maamturk range, near Maam.

Ceterach officinarum Willd. The only form that we observed in the west was var. *crenatum* Milde, which is common on the limestone. *A. Trichomanes* is very fine about Cong, the fronds being sometimes over a foot in length, and the pinnules much incised.

Cystopteris fragilis Bernh. Near Cong, both in Mayo and Galway, but uncommon.

Lastræa Oreopteris Presl. 8. About two miles N. of Maam. The var. *paleacea* of *L. Filix-mas* grows here, and also about Clonbur and Cong.

Phegopteris polypodioides Fée. 8. Between Clonbur and Mount Gable, and on the hill itself.

Ophioglossum vulgatum L. 8, 9. Damp hollows of the limestone S. of L. Mask.

Equisetum sylvaticum L. 8. Near Clonbur. — *E. limosum* L., var. *fluviatile* (L.). 8. In the river a little above Maam Bridge.

Lycopodium inundatum L. 8. Plentiful over a considerable area of the wet heath lying immediately W. of Maam. This station may be covered by the first reference in *Cybele*.

Pilularia globulifera L. 8. In a swamp adjoining L. Mask, about two miles north of Clonbur; on the N. shore of "the narrow lake"; and on wet sand by L. Mask at Maamtrasna.

Chara fragilis Desv. 8. In L. Corrib and L. Mask. — Var. *barbata* Gant. 9. Stream at Cong; S.E. end of L. Mask. — Var. *delicatula* Braun. 9. In the steamboat harbour, L. Corrib, near Cong, with *C. aspera* Willd. — *C. hispida* L., var. *rudis* Braun. 9. S.E. end of L. Mask.

Nitella opaca Agardh. 8. At the junction of the Maam river with L. Corrib. 9. Mill-pond at Cong, in two forms, one of which is of a remarkably light green for this species.

LICHENES ANTILLARUM A W. R. ELLIOTT COLLECTI.

EXPONIT EDV. A. WAINIO.

(Continued from p. 210.)

B. GRAPHIDEÆ.

1. GRAPHIS.

1. G. (GRAPHINA) ELONGATA Wain. Étud. Brés. ii. 107.

Var. CONFUSIOR Wain. Apotheciis brevioribus, circ. 5–1 millim. longis, magis flexuosis, parcius radiatim dispositis a forma typica hujus speciei differt. Ad corticem arboris prope Government House (900 ped. s. m.) in St. Vincent. Sporæ 4næ aut 2næ, long. 0·030–0·035, crass. 0·014–0·022 millim., septis transversalibus 6, cellulis circ. 6 in quavis serie, iodo cæruleo-violascentes. Thallus KHO lutescens et demum leviter rubescens.

2. G. (GRAPHINA) SUBNITIDA Nyl. in Leight. Lich. Amaz. 453, tab. lvi. fig. 14; Nyl. Lich. Fueg. 34, Lich. Guin. 49. Ad corticem arboris in Morne Couronne in Dominica (n. 171). Perithecium pallidum, tenuissimum, basi deficiens. Apothecia labiis conniventibus, demum leviter hiantibus, tenuibus, thallo concoloribus, modice elevatis instructa, 1–0·5 millim. longa, approximata. Thallus glaucescenti-pallidus, tenuis, nitidiusculus aut sat opacus. Sporæ 8næ, decolores, subfusiformes, long. 0·030–0·036, crass. 0·012–0·014 millim., murales, cellulis haud numerosis, septis transversalibus 6, loculis mediis septa una longitudinali divisis, iodo haud reagentes (metaplasmate ascorum iodo rubente).

3. G. (PHÆOGRAPHIS) DIVERSA Nyl. Syn. Lich. Nov. Cal. 74. *Phæographis* Müll. Arg. Lich. Beitr. n. 455; Fl. 1888, 522. *Lecanactis exaltata* Mont. et v. d. Bosch test. Nyl. et Hue, Lich. Exot. 239. Ad corticem arboris in Morne Anglais in Dominica (n. 526). Apothecia disco plano, nigro, epruinoso, margine thallo concolore, esorediato. Perithecium fuligineum, integrum, in labiis amphithecio thallino obductum. Sporæ fuscescentes, pluriseptatæ, long. 0·030–0·042, crass. 0·010–0·013 millim.

4. G. (PHÆOGRAPHIS) **albida**, sp. n. Thallus tenuis, lævigatus aut sat lævigatus, nitidiusculus, albidus aut pallescenti-albidus, KHO sordide fulvescens. Apothecia vulgo sat approximata, elongata, simplicia aut ramosa, vulgo flexuosa curvatave, long. 5–1 millim., latit. 0·3–0·25 millim., elevata adpressaque, labiis conniventibus, lævigatis aut demum fissura tenui apud rimam discoideam instructis, basi abruptis, thallo concoloribus, esorediatis. Perithecium tenue, pallidum et partim pallido-fuscescens, in labiis amphithecio thallino et cellulas substrati continente obductum. Discus rimæformis, inconspicuus aut nigricans. Sporæ 8næ, demum fuscescentes, oblongæ aut fusiformi-oblongæ, membrana incrassata, long. 0·026–0·028, crass. 0·008–0·012 millim., septis 5–7. Hymenium iodo cærulescens. Paraphyses apice clavatæ, clava fuscescente, 1-septata. Ad corticem arboris in Morne Anglais in Dominica (n. 528).

5. G. (PHÆOGRAPHIS) MEDUSÆFORMIS Krempelh. Fl. 1876, 416; Wain. Etud. Brés. ii. 115. Ad corticem arboris in Morne Anglais in Dominica planta huic speciei proxime affinis, at disco apotheciorum nigro nudo ab ea differens, parce lecta est. Sporæ 4næ, 7-septatæ, long. 0·025–0·030, crass. 0·009–0·010 millim. Variatio sit hujus speciei.

6. G. (PHÆOGRAPHIS) TRICOSA Ach.; Wain. *l. c.* 116. Ad corticem arboris in Château Belair in St. Vincent.

7. G. (PHÆOGRAPHIS) **rosea**, sp. n. Thallus tenuis, lævigatus, nitidiusculus, pallidus aut glaucescenti-pallidus, KHO non reagens. Apothecia increbra, elongata, long. circ. 15–5 millim., parce ramosa aut simplicia, flexuosa, lirellas roseas, 0·5–1 millim. latas formantia. Perithecium laterale tenue, fusco-nigrum, basale albidum, in labiis conniventibus, modice elevatis et basi sensim in thallum abeuntibus, amphithecio thallino, extus roseo, lævigato, obductum. Discus rimæformis, angustus, immersus, pallescens aut obscuratus. Sporæ

8næ, fuscescentes aut pallidæ, ellipsoideæ, membrana incrassata, long. 0·013–0·018, crass. 0·009–0·012 millim., 3-septatæ, iodo cæruleo-violascentes, fere distichæ. Hymenium iodo haud reagens. Epithecium decoloratum. Asci subcylindrici. Ad corticem arboris in Morne Anglais in Dominica (n. 523). Apotheciis extus roseis majusculis facile dignota.

8. G. (SCOLÆCOSPORA) COOPERTA Zenk. in Goeb. Pharm. Vaarenk. i. 187, tab. 24, fig. 3; Müll. Arg. Graph. Féean. 31. Ad corticem arboris in Morne Anglais in Dominica. Thallus glaucescenti-albidus, sat tenuis, nitidulus, leviter inæqualis. Apothecia long. 2–0·7 millim., latit. 0·4–0·5 millim., flexuosa curvatave, elevata, labiis arcte conniventibus, basi abruptis. Perithecium fuligineum, integrum, crassum, amphithecio thallino, lævigato, fere omnino obductum aut apice anguste denudatum, lævigatum. Sporæ long. circ. 0·052–0·095, crass. 0·011–0·012 millim., 16–17-septatæ (raro –9-septatæ), iodo cæruleo-violascentes, 8næ, decolores.

9. G. (SCOLÆCOSPORA) TENELLA Ach.; Wain. Étud. Brés. ii. 121. Ad corticem arborum pluribus locis in St. Vincent (n. 128 et 450).

10. G. (SCOLÆCOSPORA) DUPLICATA Ach. Syn. Lich. 81 (secund. herb. Ach.); Müll. Arg. Graph. Féean. 34. Thallus albidus, tenuis, lævigatus aut sat lævigatus, nitidiusculus. Apothecia vulgo sat approximata, elongata, long. circiter 3–1 millim. vel breviora, latit. 0·25–0·2 millim., pr. p. apicibus sensim attenuatis, simplicia aut parce ramosa, recta aut curvata, semi-immersa. Perithecium fuligineum, dimidiatum, basi deficiens, labiis conniventibus, longitrorsum bene aut parce sulcatis, parte superiore late denudatis, basi amphithecio thallino sat anguste obductis. Discus rimæformis, inconspicuus. Sporæ 8næ, decolores, long. 0·040–0·050, raro –0·020 millim., crass. 0·010 aut raro –0·007 millim., septis 10–12, raro –5, halone indutæ, iodo violaceo-cærulescentes (halone haud reagente). Paraphyses apice fuscescenti-clavatæ. Ad corticem arboris in Roseau Valley in Dominica (n. 125).

11. G. (SCOLÆCOSPORA) BONPLANDIÆ (Fée) Müll. Arg. Graph. Féean. 36. Ad corticem arboris in Morne Trois Pitons in Dominica (n. 533). Thallus flavescenti-glaucescens aut partim obscuratus, sat lævigatus, nitidiusculus. Apothecia increbra aut sat approximata, long. 3–0·8 millim., vulgo simplicia, rectiuscula aut curvata, lirellas 0·5–0·8 millim. latas formantia, labiis conniventibus et sæpe demum partim mediove leviter hiantibus, modice elevatis et basi sensim in thallum abeuntibus, thallo concoloribus, crassiusculis. Perithecium pallidum, in labiis amphithecio thallino obductum. Discus rimæformis aut angustus, immersus, obscuratus. Sporæ 8næ, decolores, monostichæ, ellipsoideæ, membrana incrassata, 3-septatæ, long. 0·015–0·025, crass. 0·010–0·018 millim., iodo sat dilute cærulescentes (etiam membrana incrassata dilute cærulescente). Hymenium parte superiore partim pallidum, partim decoloratum, iodo haud reagens.

12. G. (SCOLÆCOSPORA) LACTEA (Fée) Nyl.; Müll. Arg. Graph. Féean. 37. Ad corticem arboris in Morne Trois Pitons in Dominica (n. 535). Thallus albidus, lævigatus, nitidiusculus, tenuis. Apo-

thecia numerosa, simplicia, long. circ. 1–0·3 millim., subrecta aut subflexuosa, thallo immersa, labiis indistinctis. Discus apertus, circ. 0·25–0·2 millim. latus, leviter impressus aut thallum subæquans, obscuratus, epruinosus. Hymenium circ. 0·100 millim. crassum, superne olivaceum, iodo haud reagens. Perithecium pallidum, latere basin versus iodo cærulescens, parte superiore vinose rubens. Sporæ 8næ, decolores, long. 0·018–0·022, crass. 0·008–0·009 millim., 3-septatæ, distichæ. Asci clavati. Disco obscuriore apotheciorum et sporis paullo majoribus a *G. lactea* (Fée) differt, at variatio sit ejus. Nominetur var. *dominicana* Wain.

13. G. (Scolæcospora) grammitis Fée; Wain. Étud. Brés. ii. 126. Ad corticem arboris in Richmond Valley in St. Vincent. Male evoluta et sine sporis (n. 248).

14. G. (Glyphis) cicatricosa (Ach.) Wain. var. simplicior Wain. *l. c.* 127. Ad corticem arboris in Emsol Estate in Dominica (n. 540).

2. Opegrapha.

1. O. cylindrica Raddi; Wain. Étud. Brés. ii. 132. Ad corticem arborum ad Government House, 900 ped. s. m. (n. 124), et in Richmond Valley (n. 245) in St. Vincent.

2. **O. sexlocularis,** sp. n. Thallus tenuis, glaucescenti-albidus. Apothecia subsolitaria, elevata, vulgo elongata, long. 1–0·2 millim., latit. 0·2 millim., simplicia aut parce ramosa, recta aut curvata. Perithecium integrum, fuligineum, labiis conniventibus aut demum rima angusta levissime hiantibus. Discus rimæformis, nigricans. Hymenium iodo vinose rubens. Sporæ 8næ, decolores, fusiformes, long. 0·027–0·030 millim., crass. 0·005 millim., 5-septatæ, halone tenui indutæ, cellulis fere æque longis. Ad corticem arboris in Union Island prope St. Vincent (n. 280 pr. p.). Habitu vix differt ab *O. cylindrica* (*O. Bonplandi* Fée). Perithecium KHO smaragdulo-fuligineum.

3. **O. brachycarpoides,** sp. n. Thallus tenuissimus, rufescenti-obscuratus, aut parum distinctus. Apothecia subsolitaria, elevata, elongata, long. 0·9–0·3 millim., latit. 0·15 millim., simplicia aut parce ramosa, recta aut curvata. Perithecium integrum, fuligineum, labiis arcte conniventibus. Discus rimæformis, nigricans. Hymenium iodo vinose rubens (hypothecium subhymeniale iodo cærulescens). Sporæ 8næ, decolores, fusiformes, apicibus obtusis, long. 0·014–0·026, crass. 0·005–0·007 millim., 3–5-septatæ, halone sat tenui indutæ, cellula mediana reliquis longiore. Ad corticem arboris in Walleboo Valley in St. Vincent (n. 449). Ab *O. brachycarpa* Müll. Arg. Lich. Beitr. n. 158, apotheciis clausis, pr. p. longioribus, et sporis crassioribus differt.

4. **O. navicularis,** sp. n. Thallus tenuis aut tenuissimus, glaucescenti-albidus. Apothecia subsolitaria, elevata, oblonga aut pr. p. rotundata, long. 0·5–0·15, latit. 0·2–0·15 millim., simplicia, recta aut leviter curvata. Perithecium integrum, fuligineum (basi fuscescens), labiis primum conniventibus, demum hiantibus, tenuibus. Discus demum apertus, planiusculus, nigricans, epruinosus. Hymenium iodo vinose rubens. Hypothecium (et perithecium basale)

dilutius fuscescens. Paraphyses ramoso-connexæ. Sporæ 8næ, decolores, fusiformes, apicibus obtusis, long. 0·014–0·017, crass. 0·004–0·005 millim., 3-septatæ, halone tenui indutæ. Ad corticem arboris in Union Island prope St. Vincent (n. 280 pr. p.), una cum *O. sexloculari*.

5. **O. sordidescens**, sp. n. Thallus tenuis, glaucescens. Apothecia numerosa crebraque, elevata, long. 0·7–0·2, latit. 0·3–0·2 millim., oblonga et pr. p. rotundata, simplicia aut subsimplicia, recta aut leviter curvata. Perithecium integrum, fuligineum, labiis arcte conniventibus. Discus rimæformis, inconspicuus. Hymenium iodo vinose rubens. Paraphyses ramoso-connexæ. Sporæ 8næ, dilute fuscescentes (in KHO pr. p. decoloratæ), aciculari-fusiformes, apicibus obtusis, long. 0·034–0·054, crass. 0·003–0·0045 millim., 7-septatæ, halone nullo indutæ, cellulis fere æque longis. Ad corticem arboris prope Government House in St. Vincent. Ad subg. *Sclerographam* Wain. Etud. Brés. ii. 136, pertinet.

6. O. FILICINA Mont.; Wain. Étud. Brés. ii. 133 (*Opegraphella* Müll. Arg. Lich. Beitr. n. 1540). Ad folia arborum in Dominica et ad Bonhomme Woods in St. Vincent. Perithecium dimidiatum. Gonidia phycopeltidea. Huc etiam pertinet *O. phyllobia* Nyl. Fl. 1874, 73, et Wain. *l. c.* (gonidia phycopeltidea, nec chroolepoidea), conf. Müll. Arg. *l. c.*

3. CHIODECTON.

1. **C.** (ENTEROGRAPHA) **rufescens**, sp. n. Thallus tenuis, albido-glaucescens, crebre contextus, hypothallo evanescente aut tenui nigricante crebre contexto limitatus. Apothecia thallo immersa, approximata, elongata, long. 1·5–0·3 millim., abundanter radiatim et dichotome ramosa, flexuoso, disco rufescenti-testaceo, epruinoso, 0·05 millim. lato, thallum æquante. Hypothecium albidum. Perithecium indistinctum. Hymenium iodo persistenter cærulescens (demum obscuratum), ascis vinose rubentibus. Sporæ 8næ, decolores, ovoideo-oblongæ, long. 0·015–0·019, crass. 0·007 millim., 3-septatæ, cellula apicis superioris reliquis longiore crassioreque, iodo non reagentes, polystichæ. Asci obovoidei, membrana leviter incrassata apicem versus. Ad corticem arboris in Emsol Estate in Dominica.

2. C. (BYSSOPHORUM) CINERITIUM (Ach.) Wain. *Parmelia cineritia* Ach. Syn. Lich. 201, secund. specim. orig. in herb. Ach. (conf. Wain. Étud. Brés. ii. 143), *C. diplosporum* Nyl. Fl. 1886, 104 (Wright, Lich. Cub. n. 179, suppl. n. 3). Thallus crassitudine mediocris, sat laxe contextus, cinereo-glaucescens aut sordide albido-glaucescens, hypothallo laxissime contexto, infra thallum nigricante, ad ambitum cinerascente aut nigricante aut rarius subalbido. Pseudostromata elevata, rotundata aut difformia, demum depresso-convexa, basi demum abrupta aut leviter constricta, extus et intus albida, gonidiis chroolepoideis superficiem versus instructa, circ. 2–0·5 millim. lata, hymenia numerosissima aut rarius pauciora continentia. Disci punctiformes, minutissimi, impressi, epruinosi. Perithecium latere tenue, basi sat tenue, fusco-fuligineum. Hypothecium albidum, tenue (dilute fuscescens in Wright, Lich. Cub.

n. 179). Hymenium circ. 0·080 millim. crassum, decoloratum, raro morbose fuscescens, iodo vinose rubens. Paraphyses ramoso-connexæ. Asci clavati. Sporæ 8næ, polystichæ, medio valde attenuatæ, quasi e duabus sporis fusiformi-acicularibus connatis formatæ, parte crassiore superioreque 2-septatæ, cauda sive parte tenuiore simplice aut 1–2-septata, decolores, long. 0·042–0·044 millim., crass. parte superiore 0·003–0·004 millim., parte media 0.0007 millim., parte inferiore 0·002 millim., apicibus obtusis.

Var. CORALLINUM Wain. Thallus isidiis plus minusve instructus. Isidia long. circ. 0·7 millim. aut breviora, crass. circ. 0·2 millim. Ad corticem arboris in Richmond Valley (n. 269) fertile et ad rupem prope Baleine Falls (n. 268) sterile in St. Vincent. Huc etiam Wright, Lich. Cub. suppl. n. 3, et specim. orig. *P. cineritiæ* Ach. pertinent. Wright, Lich. Cub. n. 179 ad var. *denudatum* Wain., isidiis destitutum, pertinet.

3. C. (BYSSOPHORUM) SANGUINEUM (Sw.) Wain. Étud. Brés. ii. 143. Ad corticem arboris in Morne Anglais (2000 ped. s. m.) in Dominica (n. 520).

Var. LUTESCENS Wain. Thallus superne lutescens aut glaucescenti-lutescens, aut isidiis pro minore parte etiam rubescentibus, hypothallo lutescente. Ad corticem arboris in Morne Couronne (n. 160) et ad Basin Will (n. 545) in Dominica.

4. C. (MAZOSIA) STRIGULINUM (Nyl.) Wain. *l. c.* 147.

f. *granularis* Müll. Arg. Lich. Beitr. n. 1533. Ad folia arboris in Bonhomme Woods in St. Vincent (n. 351). Thallus continuus, verruculis sparsis instructus.

f. *lævis* Müll. Arg. *l. c.* Ad folia arboris in Bonhomme Woods in St. Vincent. Thallus continuus, lævigatus.

Subgenus *Mazosiæ* perithecio proprio laterali fusco et magis evoluto et apotheciis typice angulosis ab *Ectolechieis* differt et affinitatem cum *Chiodectone* ostendit, at habitu etiam *Ectolechiæ* valde est simile.

4. ARTHONIA.

1. A. (ALLARTHOTHELIUM) **Elliottii**, sp. n. Thallus crassiusculus aut mediocris, verrucoso-rugosus et demum verrucoso-areolatus superficie partim demum farinoso-sorediosa, glaucescens aut sordide albidus, sorediis glauco-virescentibus, hypothallo albo. Apothecia aggregata verrucis 0·5–1·5 millim. latis immersa, rotundata aut difformia, 0·3–0·1 millim. lata, disco plano, fusco-nigro, opaco, superficiem verrucæ æquante. Hypothecium fuscescens. Hymenium parte superiore fuscescens, iodo cærulescens, ascorum protoplasmate vinose rubente. Paraphyses ramoso-connexæ. Asci late clavati, membrana apice primum bene incrassata, demum tota extenuata. Sporæ 8næ, decolores, oblongæ aut ovoideæ, halone vix ulla indutæ, murales, cellulis numerosis, in seriebus transversalibus 8–10, long. 0·024–0·028, crass. 0·009–0·012 millim. Gonidia protococcoidea, globosa, membrana tenui. Medulla thalli iodo intense cærulescens. In rupe ad Boery River in Dominica (n. 154), una cum *Urceolaria actinostomate*. In subg. *Allarthothelio* Wain. gonidia sunt protococcoidea et sporæ murales.

2. A. (EUARTHONIA) SUBSTELLATA (Ach.) Nyl. *A. conferta* (Fée) Nyl.; Müll. Arg. Graph. Féean. 55; Willey, Syn. Arth. 12. Ad corticem arboris in Anguilla (n. 74 et 77 pr. p.). Thallus iodo cærulescens. Hypothecium pallidum. Hymenium iodo persistenter cærulescens, sporis vinose rubentibus. Sporæ primum 3- et 4-septatæ, demum 5-septatæ, long. 0·014–0·022, crass. 0·006–0·007 millim., ovoideo-oblongæ, cellulis 2 medianis reliquis longioribus.

3. A. (ARTHONIOPSIS) **microsticta**, sp. n. Thallus tenuissimus, continuus, lævigatus, glaucescens, gonidia phycopeltoidea continens. Apothecia sat approximata, anguloso-rotundata aut pr. p. difformia, diam. 0·25–0·1 millim., disco nigro aut fusco-nigricante, nudo, plano, opaco. Hypothecium fuscescens. Hymenium 0·020–0·025 millim. crassum, parte superiore fuscescens, iodo vinose rubens. Asci pyriformes, membrana sat tenui. Sporæ 8næ, decolores, ovoideo-oblongæ aut oblongæ, 1-septatæ, medio leviter constrictæ, long. 0·008–0·010 millim., crass. 0·003–0·0035 millim., cellulis æque longis. Ad folia arboris in Dominica. *A. leptospermati* (Müll. Arg.) Lich. Epiph. 17, et *A. aciniformi* Stirt. Lich. Leav. Amaz. 7, affinis est.

II. PYRENOLICHENES.

1. VERRUCARIA.

1. V. ÆTHIOBOLIZA Nyl. Fl. 1886, 322. Thallus tenuis, subcontinuus aut rimoso-diffractus aut subdispersus, cæsio-cinereus aut cæsio-glaucescens, lævigatus, sat opacus, hypothallo indistincto. Apothecia crebra, verrucas hemisphæricas, 0·3–0·25 millim. latas, atras, nitidulas, vertice convexas formantia. Perithecium fuligineum, integrum. Nucleus hemisphæricus, iodo vinose rubens aut violascens. Paraphyses haud evolutæ. Periphyses breves, simplices, parti superiori perithecii affixæ. Asci clavati. Sporæ 8næ, ellipsoideæ aut oblongæ aut oblique oblongæ, decolores, simplices, distichæ, long. 0·018–0·013, crass. 0·009–0·005 millim., apicibus obtusis aut rotundatis. In rupe ad Château Belair in St. Vincent, una cum *Placodio diplacioide*. Forsan est variatio *V. æthiobolæ* Ach. (Wain. Adj. Lich. Lapp. ii. 173).

2. STAUROTHELE.

1. **S. acarosporoides**, sp. n. Thallus squamuloso-areolatus, areolis circ. 1–2 millim. latis, difformibus, angulosis aut demum sublobatis, adpressis, planiusculis, testaceo- aut cinereo-fuscescentibus, sat opacis, subcontiguis aut subdispersis, crassitudine mediocribus. Apothecia thallo immersa, apice nigricante haud aut leviter prominente. Perithecium globosum, fusco-fuligineum, integrum. Paraphyses nullæ. Periphyses in parte apicali perithecii numerosæ, breves. Gelatina hymenialis iodo intense cærulescens. Gonidia hymenialia numerosissima, globosa aut ellipsoidea, simplicia, long. 0·002–0·003, crass. 0·002–0·0015 millim., virescentia. Sporæ binæ aut singulæ, fuscescentes, murales, long. 0·030–0·035, crass. 0·012–0·016 millim., ellipsoideæ aut oblongæ, apicibus rotundatis, cellulis numerosissimis. Gonidia thalli pleurococcoidea, cellulis singulis aut binis, diam.

0·005–0·007 millim. Thallus parenchymaticus, fere homœomericus, inferne hyphis nigricantibus substrato affixus, circa apothecia strato corticali subamorpho obductus. Ad cementum muri in Kingstown in St. Vincent (n. 289). Habitu subsimilis est *Acarosporæ fuscatæ.*

Var. PALLESCENS Wain. Thallus pallidus, pr. p. distincte squamosus. Sporæ decolores aut pr. p. pallidæ. Locis umbrosis ad lapides in Fort Charlotte in Kingstown in St. Vincent (n. 258) una cum *Lecidea variabili.*

3. NORMANDINA.

1. N. PULCHELLA (Borr.) Leight.; Wain. Étud. Brés. ii. 188. Ad corticem arborum in Roseau Valley in Dominica.

4. BOTTARIA.

1. B. LIBRICOLA (Fée) Wain. *Pyrenula* Fée, Ess. Crypt. Ecorc. ii. 82; Müll. Arg. Rev. Lich. Mey. 318. *Verrucaria* Nyl. Syn. Lich. Nov. Cal. 87. *Anthracothecium libricolum* Müll. Arg. Pyr. Cub. 415; Pyr. Féean, 36. *Verrucaria aspistea* Nyl. Exp. Pyrenoc. 43 (haud Ach.). Ad corticem arboris in Anguilla (n. 73). Thallus albidus et partim flavido-pallescens. Apothecia aggregata, primum immersa et demum emergenti-semi-immersa, circ. 0·340 millim. lata. Perithecium integrum, fuligineum, globosum. Sporæ 8næ, fuscescentes, murales, long. 0·035–0·048, crass. 0·014–0·019 millim., septis transversalibus 7. Paraphyses simplices.

5. PYRENULA.

1. P. MARGINATA (Hook.) Trev.; Wain. Étud. Brés. ii. 200. Ad corticem arboris in Morne Trois Pitons (4500 ped. s. m.) in Dominica (n. 531).

2. P. KUNTHII Fée; Wain. *l. c.* 201. Ad corticem arboris in Richmond Valley in St. Vincent (n. 238).

3. P. MAMILLANA (Ach.) Trev.; Wain. *l. c.* Ad corticem arborum in Roseau Valley in Dominica (n. 122) et in Richmond Peak in St. Vincent (cum n. 265).

4. **P. aggregans,** sp. n. Thallus hypophlœodes aut endophlœodes, macula pallido-albescente et partim glaucescente indicatus, nitidulus, hypothallo nigricante limitatus. Apothecia minutissima, 0·3–0·25 millim. lata, verrucas atras conoideo-hemisphæricas formantia, crebre aggregata, parcius etiam confluentia. Perithecium elevato-hemisphæricum aut depresso-subglobosum, fuligineum, integrum. Sporæ 8næ, fuscescentes, fusiformi-ellipsoideæ, long. 0·013–0·015, crass. 0·007–0·008 millim., 3-septatæ, loculis regularibus aut sæpe irregularibus obliquisque. Paraphyses simplices. Ad corticem arboris in Morne Trois Pitons in Dominica (n. 534). Potius ad stirp. *Pyramidalem* Müll. Arg. quam *Subglobosam* Müll. Arg. pertinet. A *P. subaggregata* Müll. Arg. Pyr. Cub. 410, apotheciis nudis, nec thallino-velatis, differt.

5. P. BONPLANDIÆ Fée; Müll. Arg. Pyr. Féean. 31. *P. aspistea* Ach. Syn. Lich. 123 pr. p. Ad corticem arboris in Morne Anglais in Dominica (n. 529).

6. P. PORINOIDES Ach.; Müll. Arg. Lich. Beitr. n. 901; Pyr. Féean. 32. Ad corticem arboris in Coles Hill in St. Vincent (n. 447). Thallus testaceo- aut fulvescenti-pallidus aut pallidus. Perithecium integrum, globosum, circ. 0·350 millim. latum. Sporæ long. 0·016–0·022, crass. 0·006–0·008 millim., 3-septatæ.

(To be continued.)

REVISION DES ROSA DE L'HERBIER BABINGTON.

PAR FRANÇOIS CRÉPIN.

(Concluded from p. 216.)

ROSA GRAVEOLENS Gren. J'ai vu dans l'herbier Babington des échantillons de la Rose du Warwickshire que M. Baker décrit sous le nom de variété *Billietii*, et qu'on peut identifier au *R. Billietii* Pug., qui est une variété du *R. graveolens.* Ces échantillons proviennent de pieds cultivés dans le jardin de W. T. Bree, à Allesley, et dans celui de Borrer. Cette Rose serait, paraît-il, originaire de Bidford, dans le Warwickshire. Avant d'admettre le *R. graveolens* comme indigène en Angleterre, on fera bien d'attendre qu'il ait été retrouvé soit dans le Warwickshire, soit dans d'autres comtés.

La dernière édition du *London Catalogue* comprend encore le *R. inodora* Fries, qui est bien une variété du *R. graveolens.* Jusqu'à présent je n'ai jamais vu le *R. inodora* originaire des Iles Britanniques. Le *R. agrestis* Savi, *inodora* Fries, recueilli par M. Bagnall dans le Warwickshire, et distribué, en 1887, par le Botanical Exchange Club, n'est aucunement l'espèce de Fries. Autant que j'en puis juger sur un unique ramuscule fructifère, la plante de M. Bagnall est une variété du *R. canina* du groupe *R. scabrata* Crép.

ROSA TOMENTOSA Sm. Les matériaux du *R. tomentosa* Sm. renfermés dans l'herbier Babington pourraient faire l'objet de très nombreuses remarques sur les variétés de ce type, mais comme ces remarques exigeraient un développement trop considérable pour cette notice, je me bornerai à quelques observations.

Dans l'herbier Babington, se trouvent des exemplaires de deux variétés du *R. tomentosa* que M. Baker a dénommés *R. Blondæana* Rip., et a, dans sa monographie, rapportés à sa variété *marginata.* Ces variétés, recueillies par Babington et Lees dans l'île d'Arran et dans le Carnarvonshire, tendent à se rapprocher de la variété du *R. tomentosa* que Scheutz a décrite sous le nom faux de *R. mollis* Sm. var. *glabrata* Fries (*Journ. Bot.* 1888). La variété *marginata* Baker, qui vise soit le *R. marginata* Wallr., soit le *R. trachyphylla* Rau, doit disparaître des Flores d'Angleterre. Le *R. Blondæana* Rip., rapporté comme synonyme à cette variété *marginata*, est une variété du *R. canina*, et quant au *R. tomentosa* var. *b.* Rapin., également cité en synonyme, c'est un *R. tomentosa* × *glauca.*

Parmi les variétés du *R. tomentosa*, on énumère encore les variétés *uncinata* Lees et *pseudo-mollis* E. Baker. Avant d'exprimer une opinion définitive sur ces deux dernières Roses, j'ai besoin de recevoir un supplément de matériaux et d'informations. Elles méritent d'attirer l'attention des botanistes qui peuvent les étudier dans leurs habitations.

Rosa mollis Sm. La synonymie du *R. mollis* Sm. est restée pendant très longtemps fort mal établie. Linné avait compris, dans son *R. villosa*, cette espèce et le *R. pomifera* Herrm. Quelques auteurs s'étaient imaginés que Linné avait également visé le *R. tomentosa* Sm. dans son *R. villosa*, or cela ne paraît pas exact. En 1762, Herrmann a détaché du *R. villosa* une Rose connue depuis le temps des Bauhin, et à laquelle il a donné le nom de *R. pomifera*. En 1812, Smith a donné le nom de *R. mollis* au second membre de l'ancien *R. villosa*. C'est pour ce second membre que Fries, en 1828, a exhumé le nom de *R. mollissima* Willd., or Willdenow, comme je crois l'avoir autrefois démontré, avait visé, sous ce nom, le *R. tomentosa* Sm. Les botanistes suisses ont pendant longtemps compris sous le nom de *R. mollissima* Fries non Willd. le *R. mollis* Sm. et un membre de la subsect. *Tomentosæ*, le *R. omissa* Déséglise. Dans la synonymie de son *R. mollissima*, M. Baker comprend le *R. Grenierii* Déségl. et *R. recondita* Pug., qui appartiennent au *R. pomifera* Herrm.

Sous le nom de *R. villosa*, Woods a bien décrit le *R. mollis* sous diverses variétés. Son *R. heterophylla*, dont je n'ai pu voir d'échantillons authentiques, est rapporté, par M. Baker, au *R. mollissima*, c'est-à-dire au *R. mollis*.

La variété décrite par M. Baker sous le nom de *pseudo-rubiginosa* n'est point identique à la plante belge que j'ai décrite sous le nom *R. arduennensis*.

Rosa pomifera Herrm. Les anciens auteurs paraissent avoir généralement décrit le *R. pomifera* sur la plante cultivée ou naturalisée au voisinage des habitations. Cette espèce, à cause de ses fruits, qui fournissent une excellente confiture, semble avoir été, depuis très longtemps, introduite dans les jardins et les parcs d'un grand nombre de contrées européennes. Des cultures, elle s'est répandue et est devenue naturalisée dans une foule de localités. Cette naturalisation a rendu les recherches de géographie botanique assez difficiles, en ce sens que, pour bien des localités, on hésite entre l'état de naturalisation et celui d'indigénat véritable.

Presque partout, le *R. pomifera* cultivé ou naturalisé présente le même facies, tandis que le *R. pomifera*, dans les montagnes où il est indigène, se présente sous des formes variées.

Les échantillons originaires des Iles Britanniques que j'ai vus appartiennent à la forme cultivée et ne sont probablement pas d'origine indigène.

J'en arrive maintenant à une variété sur laquelle la lumière n'avait pas encore été faite, j'entends parler du *R. Dicksoni* Lindl. Lindley, qui ne paraît pas avoir bien connu le *R. pomifera*, s'est efforcé, dans une longue description, à donner vie à sa création spécifique. Celle-ci n'a aucune valeur. Son *R. Dicksoni*, que j'ai bien étudié dans son herbier et dans celui de Babington, est une simple variation du *R. pomifera* cultivé.

On sait que je considère les *R. pomifera* et *R. mollis* comme deux simples variétés du même type spécifique, variétés reliées l'une à l'autre par des variations nombreuses et entre lesquelles il n'existe pas de caractères essentiels distinctifs pour justifier leur séparation.

Rosa blanda Ait. Le *R. blanda* Ait., qui a aussi été désigné sous le nom de *R. fraxinifolia* Borkh., est une espèce américaine introduite en Europe depuis très longtemps et devenue naturalisée dans bien des endroits. Certains auteurs l'ont confondu avec le *R. cinnamomea* L. C'est ainsi que Cosson et Germain, dans leur *Flore des environs de Paris*, l'ont décrit sous ce dernier nom. En Angleterre, la même confusion paraît avoir été faite.

L'examen que je viens de faire, dans l'herbier Babington, d'un bel échantillon dénommé *R. cinnamomea* L., et provenant du jardin de Borrer, m'a fait reconnaître que la figure du *R. cinnamomea* de l'*English Botany* (tab. 2388) en ce qui concerne le rameau fleuri se rapporte exactement au *R. blanda* Ait., et qu'en outre les descriptions des auteurs anglais visant le *R. cinnamomea* à fleurs simples s'appliquent également au *R. blanda*. C'est donc, selon moi, ce dernier qu'on a pris en Angleterre pour le type de Linné.

Le *R. blanda* se distingue du *R. cinnamomea* par ses aiguillons tous épars et jamais géminés, disparaissant presque toujours sur les branches et les ramuscules qui sont inermes, par les feuilles moyennes de ses ramuscules florifères 7-foliolées et non presque toujours 5-foliolées, par ses stipules et bractées beaucoup moins dilatées et d'une autre forme. Peut-être le *R. cinnamomea* L. à fleurs simples a-t-il été observé en Angleterre. Le rameau fructifère de la planche 2388 de l'*English Botany* paraît appartenir au vrai *R. cinnamomea* L. Les botanistes anglais feront bien de revoir attentivement ce qu'ils possèdent en herbier sous le nom de *R. cinnamomea*.

Rosa alpina L. Le *R. alpina* L. est naturalisé depuis assez longtemps dans un bois aux environs de Perth. A l'avenir, le *London Catalogue* pourra comprendre cette espèce au même titre que les *R. pomifera* Herrm., *R. gallica* L., *R. lucida* Ehrh., et *R. sempervirens* L.

Rosa pimpinellifolia L. Les nombreux spécimens du *R. pimpinellifolia* L. de l'herbier Babington ne donnent lieu à aucune remarque. Ils représentent les deux variétés les plus ordinaires : celle à pédicelles lisses ; celle à pédicelles hispides-glanduleux (*R. spinosissima* L.).

Jusqu'à présent, je n'ai pas encore vu d'origine britannique la variété *Ripartii* (*R. Ripartii* Déségl.), que M. Nicholson dit exister à Barnes Common dans le comté de Surrey.

Quant à la variété *pilosa* Lindl., c'est une forme hybride du groupe *R. involuta* Sm.

Rosæ hybridæ.

Dans la dernière édition du *London Catalogue* (1895), la liste des *Rosa* revisée par M. Rogers comprend encore comme espèces autonomes, légitimes, les *R. involuta* Sm. et *R. hibernica* Sm. Ces *Rosa* sont incontestablement des hybrides ; aucun doute ne peut être élevé sur leur origine bâtarde.

Woods, Smith et Lindley n'avaient pas eu le moindre soupçon de cette origine. L'ignorance de celle-ci a été la cause de certaines réflexions faites par Lindley (*Monog.*, pp. xvi et xvii) sur les prétendus passages d'une espèce à l'autre, réflexions qui n'eussent pas été faites si cet auteur avait soupçonné la nature des faits qu'il invoquait. La confusion des espèces avec les hybrides qui s'est perpétuée jusqu'à ces derniers temps a été l'une des causes principales de l'obscurité qui a régné sur la distinction des véritables types spécifiques et qui a fait croire à une polymorphie excessive de ceux-ci. Aujourd'hui, grâce à une étude rationnelle et approfondie du genre, la légende de l'extrême polymorphie des *Rosa*, imaginée par Linné et propagée par la plupart des monographes, tend à prendre fin, et ne tardera pas à disparaître complètement de l'esprit de tout botaniste qui voudra se donner la peine d'étudier les faits sans prévention et sans parti pris.

ROSA GALLICA × ARVENSIS. Le *R. systyla* var. *Monsoniæ* Lindl. est, selon toute apparence, un *R. gallica × arvensis*.

Dans l'herbier Babington, il y a des échantillons recueillis à Cowfold, dans le comté de Sussex, portant le nom de *R. arvensis fl. subpleno*, qui paraissent également des *R. gallica × arvensis*.

Le croisement hybride qui a produit ces formes bâtardes a sans doute eu lieu avec l'aide du *R. gallica* L. cultivé ou subspontané.

ROSA GALLICA × CANINA. La forme que Briggs a recueillie à Calstock et distribuée sous le nom de *R. collina* Jacq. est un *R. gallica × canina*, comme du reste l'est la plante de Jacquin.

Le *R. caucasea* Lindl. est également une forme du groupe *R. collina* Jacq., c'est-à-dire un *R. gallica × canina*.

ROSA PIMPINELLIFOLIA × CANINA. Le *R. hibernica* Sm. comprend incontestablement des produits hybrides du *R. pimpinellifolia* L. croisé avec des variétés glabres et pubescentes du *R. canina*, et peut-être aussi avec des *R. glauca* et *R. coriifolia*. Il est représenté par deux groupes de variations : l'un à feuilles glabres, l'autre à feuilles plus ou moins pubescentes. La pubescence de ces dernières peut se réduire à celle de la nervure médiane des folioles. Le *R. hibernica* n'a encore été observé jusqu'ici qu'à dents foliaires simples ou presque toutes simples.

Les variations de chacun de ces deux groupes offrent entre elles des différences assez sensibles, ce qui s'explique par la diversité des variations de leurs ascendants. Tantôt les sépales extérieurs sont assez bien appendiculés latéralement, tantôt ils sont entiers. Habituellement, les sépales restent étalés sur les réceptacles arrivés à maturité, mais dans quelques rares cas ils peuvent être franchement redressés ; ils se désarticulent à la fin, ou bien ils sont persistants. La variété *cordifolia* Bak. s'éloigne beaucoup des formes ordinaires. Ses pédicelles sont hispides-glanduleux.

J'ai reçu le *R. hibernica* d'Écosse de deux localités distinctes.

Il restera à rechercher si, parmi les variations de cet hybride, on n'a pas confondu des *R. pimpinellifolia × glauca* et *R. pimpinellifolia × coriifolia*.

Rosa pimpinellifolia × tomentosa. Les produits hybrides des *R. pimpinellifolia* et *R. tomentosa*, assez répandus dans les Iles Britanniques, ont donné lieu à la création de plusieurs fausses espèces : *R. Sabini* Woods, *R. gracilis* Woods, *R. Doniana* Woods, *R. involuta* Sm. et *R. Wilsoni* Borrer. Les auteurs de ces espèces se sont efforcés sans grand succès de circonscrire ces créations spécifiques. M. Baker a réduit celles-ci au rang de simples variétés en cherchant, lui aussi, à leur attribuer des caractères qui puissent les faire distinguer les unes des autres. Aujourd'hui, le *London Catalogue* accuse douze variétés de l'hybride en question, mais celles-ci ne sont certainement pas épuisées, et l'avenir nous en réserve d'inédites. La variété *occidentalis* Baker, établie sur des spécimens recueillis en Irlande par W. Hooker, et que Lindley avait décrits sous le nom de *R. pimpinellifolia* var. *pilosa*, est très curieuse par la petitesse de ses folioles à dents ordinairement simples et par un facies qui l'éloigne beaucoup des autres variétés décrites.

Rosa pimpinellifolia × mollis. Dans mon mémoire sur les Roses hybrides (*Rosæ hybridæ*, 1894, pp. 46 et 47), j'ai parlé d'une forme hybride recueillie en Écosse, dans le comté de Sutherland, par M. Melville, qui paraît bien être un *R. pimpinellifolia* × *mollis*.

D'autre part, M. Barclay m'a envoyé, provenant de Kinfauns (comté de Perth), une forme qu'il avait tout d'abord prise pour une variété du *R. involuta* Sm. et qu'il est aujourd'hui porté à considérer comme un *R. pimpinellifolia* × *mollis*. Les arguments que fait valoir M. Barclay en faveur de sa nouvelle opinion, paraissent assez fondés. Remarquons, à ce propos, que la distinction des *R. pimpinellifolia* × *tomentosa* et *R. pimpinellifolia* × *mollis* est très difficile à établir sur des échantillons d'herbier, et qu'en conséquence il y aurait rien d'impossible à ce que certaines formes du *R. pimpinellifolia* × *mollis* ne se fussent glissées parmi les formes décrites sous des noms de variétés de *R. involuta* Sm.

Comme on peut le voir par les remarques précédentes, il reste encore bien des recherches à faire pour élucider complètement le genre *Rosa* dans les Iles Britanniques.

En terminant cette revision, qu'il me soit permis de faire une recommandation aux botanistes qui récoltent et distribuent des échantillons de *Rosa*. Si certains collecteurs, connaissant bien les difficultés inhérentes à l'étude des espèces et de leurs variétés sur échantillons d'herbier, ont toujours soin de distribuer, à leurs correspondants, des parts suffisamment fournies, il en est d'autres qui se bornent à l'envoi de fragments incomplets et fréquemment indéchiffrables. Des déterminations établies sur des matériaux mal préparés ou mal choisis sont souvent cause de confusions et d'erreurs, qui se propagent dans les herbiers et viennent jeter le trouble dans l'esprit des botanistes qui ont foi dans l'autorité de certains spécialistes. Que les collecteurs tiennent bien compte de cette vérité, c'est que le degré d'exactitude d'une détermination, d'une identification spécifique, est un raison du choix et du nombre des spécimens soumis à l'examen du spécialiste.

BIBLIOGRAPHICAL NOTES.

XI.—The Misuse of the Index Kewensis.

At the risk of wearying the readers of this Journal by a further note on the vexed question of nomenclature, I am compelled to enter a protest against the mischievous misuse which seems likely to be made of Mr. Jackson's *Index*, and indeed is now being made by some botanists.

There are already sufficient agencies at work upon the upsetting of nomenclature to render any addition to their number undesirable. But the confusion at present introduced, much of it unnecessarily, is as nothing to that which will ensue if the method adopted by Mr. Druce in the *Annals of Scottish Natural History* for April (p. 108) be followed.

The paper on the *London Catalogue* which Mr. Druce printed in the *Annals* for January, and which was previously offered to this Journal, has already been criticized. Mr. Arthur Bennett and Mr. Marshall* have commented upon it with a severity which I cannot consider undeserved, and a short paragraph in these pages† sufficiently indicated grounds upon which it was open to criticism. Yet Mr. Druce still urges on his wild career, and in the April number of the *Annals* proceeds to point out "other changes" which "will still have to be made if we adhere to the law of priority."

If Mr. Druce had taken the trouble to look up the references which he cites at second-hand from the *Index Kewensis*, there would be less ground of complaint. Though it seems to be reprehensible to employ the work solely as an aid to name-changing, there is no doubt it can so be used, and any one who is ambitious of seeing his name appended to new combinations can no doubt secure it by this means. But unless he takes the trouble to verify his references, even this petty gratification will be denied him. I do not suggest that Mr. Druce has been actuated by this motive, though I confess I am unable to discover what object he has in view. I propose to call attention to one or two of the last twelve changes which he has proposed, and to show that on other grounds his mode of procedure is open to criticism.

"*Horkelia*, Reichb., *ex* Bartling, 'Nar. [sic] Ord.,' 76 (1830) appears to be earlier than *Wolffia*, Hork., in 'Linnæa,' xiii. p. 389 (1839). Our plant would be *Horkelia arrhiza* (L.). It was the *Lemna arrhiza* of Linnaeus."

Now if Mr. Druce had referred to Bartling's *Ordines Naturales Plantarum*, he would have found:—

"Wolfia Hork. (Horkelia Reichenb.)."

And if he had looked up what he calls "Hork. in 'Linnæa'"—meaning thereby, as Mr. Jackson more accurately notes, a paper by Schleiden in which Horkel's name is cited—he would have found Schleiden's protest against the change.

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* *Ann. Scott. Nat. Hist.* April, 1896, pp. 109–112.

† *Journ. Bot.* 1896, 95.

Mr. Druce indeed might have contended that *Horkelia* should stand on the ground that the spelling in Bartling is *Wolfia*, a name already occupied by a genus of *Scitamineæ;* and it may be urged by some that, even if we accept *Wolffia* as the corrected spelling, the two names are too much alike for both to be maintained. Strictly speaking, however, Bartling's names are both *nomina nuda:* not only is there no diagnosis of the genus, but it is placed among other "Genera monocotyledonea dubia l. incertæ sedis," and is followed by the words "An Najadea?" If this view be accepted, the genus dates from Schleiden's citation, where it stands "Wolffia Horkel Msc. Horkelia Reichenbach." Mr. Jackson does not cite *Wolfia* from Bartling at all, although it is the earliest occurrence of the name as applied to the lemnaceous plant. But this point I do not propose to discuss: it is certain that, had Mr. Druce known of this misspelling, he would not have omitted to refer to it.

Another result of citing references at second-hand is the promulgation of mistakes into which even the most careful are apt to fall. Mr. Jackson quotes "*Crepis succisæfolia* Tausch in Flora, ix (1828) I. Erg. 79"; this Mr. Druce cites as "Tausch, 'Fl.' ix (1828)": if he had checked his reference he would have seen that "ix." is a slip for "xi." Mr. Druce may say that it is not always easy to check references, to which it may be replied that it is not incumbent on him to propose changes, and that he has no right to do so until he has taken some steps towards being sure of his ground.

"*Ulex Gallii*, Planch., 'Ann. Sc. Nat.' (1849), p. 213, is antedated by *U. provincialis*, Le Gall, 'Fl. Morb.,' 128." Mr. Druce may plead that he has sometimes been led astray by the *Index Kewensis*, or by his interpretation of it; but in this instance he has no one to blame but himself. Le Gall published his *Flore du Morbihan* in 1852; Planchon's paper, as Mr. Druce tells us, was printed in 1849;* how then can Le Gall's name antedate *U. Gallii?* Planchon (*l. c.*), having presumably seen the proofs, cites "Le Gall, Fl. Morbih. (*inédit.*)," and names the plant *Gallii* in compliment to Le Gall, who thought he had *U. provincialis* Lois.—the name under which the plant appears in his *Flore.* Mr. Jackson rightly says:—"*provincialis* Le Gall, Fl. Morb. 128 = Gallii"—he does not seem to have noticed Planchon's earlier citation of the name. I know not on what possible ground Mr. Druce can justify his assertion. Mr. Bennett† rightly says that "correlation of specimens as well as hunting through books" is necessary before names can be satisfactorily changed; it would appear from Mr. Druce's action that he thinks even the books may be dispensed with.

A further point of criticism is suggested by Mr. Druce's paper with regard to abbreviations and references. The former should never be so abridged as to be unintelligible or doubtful; Mr. Jackson's abbreviations are excellent, and it is a pity that Mr. Druce did not adopt them. But "Herb. Br." for "Herbarium Britannicum,"

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* Here again is an instance of insufficient citation: three volumes of the *Annales* bear the date 1849, but Mr. Druce does not think it worth while to specify which is referred to, although Mr. Jackson cites the number (xi).

† *Ann. Scott. Nat. Hist.* April, 1896, 111.

"Fl." for "Flora" (the journal so called), "En. Pl." for "Enumeratio Plantarum" may be taken as examples of unsatisfactory abbreviations: Mr. Jackson rightly gives these as "Herb. Brit.," "Flora," and "Enum. Pl." Again, there should be some different way of citing a complete work and a paper in a magazine: Mr. Druce cites "Tausch, Fl." and "Planch., Ann. Sc. Nat." where Mr. Jackson quotes "Tausch, in Flora" and "Planchon, in Ann. Sc. Nat." There should be one mode of citation, whereas on this one page Mr. Druce indulges in almost infinite variety: sometimes the author's name alone is quoted; sometimes the title of the book is added, with or without the date, volume, and page. Occasionally the matter rests on Mr. Druce's *ipse dixit*—"*Chrysanthemum Parthenium*, Bernh., is earlier than Persoon," for example.

I do not propose to pursue further my examination of Mr. Druce's last contribution to the confusion of nomenclature, but the single page from which I have cited these examples contains material for further criticism. In the interests of botanical nomenclature in general and of British botanists in particular, I would implore Mr. Druce to refrain from continuing his present course of burdening our literature with untenable names.

James Britten.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

William A. Clarke, F.L.S.

(Continued from p. 228.)

Carex rigida Good. in Trans. Linn. Soc. ii. 193 (1792). **1792.** "In summo vertice montis Snowdon, Mr. Hudson. In alpicis Scoticis, Mr. Dickson."—Trans. Linn. Soc. *l. c.* But it had been found by Sir J. E. Smith, in 1782, on Ben Lomond (see E. B. 2047).

C. aquatilis Wahlenb. in Vet. Akad. Nya Handl. Stockh. 165 (1803). **1832.** "Common on the Clova range of mountains," Scotland; found by W. J. Hooker, W. S. Burchell, and R. K. Greville [about 1824].—E. B. S. 2758.

C. kattegatensis Fries, Ind. Sem. Hort. Upsal. (1857). *C. salina* Wahlenb. *β. kattegatensis* Lond. Cat. ed. 8. **1885.** "Caithness, August, 1883. J. Grant."—Journ. Bot. 1885, 50, 290.

C. Goodenowii J. Gay in Ann. Sci. Nat. 2nd ser. xi. 191 (1839). *C. vulgaris* Fries (1842). **1696.** "Gramen cyperoides, foliis caryophylleis, spicis erectis sessilibus è seminibus confertis compositis."—Ray Syn. ii. 264, 4. "Gramen caryophylleum, angustissimis foliis, spicis sessilibus brevioribus erectis non compactis, Nobis . . . Hoc primo a charissimo Fratre Tillemano ostensum est, dein variis in locis observatum."—Morison, Hist. Ox. iii. 243 (1699). "Peat Bogs on Bullingdon Green."—Sibth. Fl. Oxon. 31 (1794).

C. flacca Schreb. Spicil. Fl. Lips. Appendix, no. 669 (1771). *C. glauca* Scop. (1772). **1688.** "Gramen cyperoides fol. caryoph.

vulg. In pratis humidis verno tempore."—Ray Hist. ii. 1293. "Harefield" (Middx.).—Blackst. Fasc. 35 (1737).

C. magellanica Lam. Encycl. iii. 385 (1789). *C. irrigua* Sm. (1826). **1841.** Edinb. Cat. Brit. Pl. ed. 2 (*irrigua*). First noticed by John Thompson on Muckle Moss, Northumberland.—Babington in Phytol. i. 309 (1842).

C. limosa L. Sp. Pl. 977 (1753). **1778.** "In paludibus turfosis in comitatibus Eboracensi, Lancastrensi, Westmorlandico, &c. passim."—Huds. Fl. Angl. ed. ii. 409.

C. rariflora Sm. E. B. 2516 (1813). **1813.** "Discovered in 1807 by Mr. G. Don . . . among the mountains of Clova."—E. B. *l. c.*

C. digitata L. Sp. Pl. 975 (1753). **1778.** "Prope Bath, D. Sole."—Huds. Fl. Angl. ed. ii. 409.

C. ornithopoda Willd. Sp. Pl. iv. 255 (1805). **1874.** Discovered May 31, 1874, in Miller's Dale, Derbyshire, by J. Whitehead and H. Newton.—Journ. Bot. 1874, 371.

C. humilis Leysser, Fl. Halensis, 175 (1761). **1792.** "In rupe Sancti Vincentii dictâ, propè Bristol. D. Sole."—Trans. Linn. Soc. ii. 167.

C. montana L. Sp. Pl. 975 (1753). **1845.** Found by W. Mitten, May, 1843, "by the road side towards Eridge, in Sussex, about a mile south of Tunbridge Wells."—Phytol. ii. 289.

C. pilulifera L. Sp. Pl. 976 (1753). **1688.** "In Ericeto Hampstediensi propè Londinum invenit D. S. Doody."—Ray Hist. ii. 1910.

C. ericetorum Poll. Hist. Pl. Palat. ii. 580 (1777). **1863.** Found by C. C. Babington and J. Ball, in 1838, on the Gogmagog Hills, Cambridge, but remained undistinguished till 1861.—E. B. S. 2971.

C. præcox Jacq. Fl. Austr. v. 23 (1778). **1632.** "Gramen spicatum foliis vetonicæ caryophyllatæ, Lob." Hampstead Heath. —Johns. Enum.

C. tomentosa L. Mant. 123 (1767). **1800.** "In meadows near Merston Measey [Marston Maisey], Wiltshire. Mr. Teesdale." —Trans. Linn. Soc. v. 269. "He found it . . . in June, 1799." —E. B. 2046.

C. pallescens L. Sp. Pl. 977 (1753). **1670.** "In pratis circa Middleton agri Warwicensis."—Ray Cat. 144.

C. panicea L. Sp. Pl. 977 (1753). **1696.** "Gr. cyp. fol. caryoph. spicis è rarioribus et tumidioribus granis compositis."—Ray Syn. ii. 264, 3. "Frequent in Suffolk. Mr. Woodward."—With. Bot. Arr. ed. 2, 1045 (1787).

C. vaginata Tausch. in Flora, iv. 557 (1821). **1811.** "Found by Mr. W. Borrer, in August, 1810, on the rocky ledges of Craig Challoch, in Breadalbane."—E. B. 2293 (C. Mielichoferi).

C. atrofusca Schkuhr, Riedgr. 106 (1801). (*C. ustulata* Wahl. (1806). **1812.** "Gathered on Ben Lawers by Mr. Geo. Don."—E. B. 2404.

C. frigida All. Fl. Ped. ii. 270 (1785). **1874.** "We have been informed that during the excursion of the Scottish Botanical Alpine Club to the Aberdeen and Forfarshire mountains in August last, Mr. John Sadler . . . discovered . . . *Carex frigida* All."—Journ. Bot. 1874, 339.

C. capillaris L. Sp. Pl. 977 (1753). **1777.** "On Benteskerny Craigneulict & Malghyrdy in Breadalbane; Mr. Stuart."—Lightf. Fl. Scot. 557.

C. pendula Huds. Fl. Angl. 352 (1762). **1663.** "Teversham moor," Cambs.—R. C. C. App. i. 5.

C. strigosa Huds. Fl. Angl. ed. ii. 411 (1778). **1696.** "Found in a Lane at Black Notley (Essex) by Mr. Dale."—Ray Syn. ii. 265.

C. ventricosa Curtis, Fl. Lond. fasc. vi. 68 (c. 1790); With. Bot. Arr. ed. 2, 1049 (1787). *C. depauperata* Good. (1792). **c. 1790.** Found by Dr. Goodenough, in company with Curtis, in Charlton Wood, Kent.—Curt. Fl. Lond. *l. c.* (See Journ. Bot. 1896, 185.)

C. sylvatica Huds. Fl. Angl. 353 (1762). **1640.** "Gramen Cyperoides sylvarum tenuius spicatum."—Park. Theatr. 1171, 3. "In Madingley Wood" (Cambs.).—R. C. C. 67 (1660).

C. lævigata Sm. in Trans. Linn. Soc. v. 272 (1800). **1800.** "In a marsh near Glasgow, 1793. Mr. J. Mackay."—Linn. Trans. *l. c.*

C. binervis Sm. in Trans. Linn. Soc. v. 268 (1800). **1800.** "Very common on the driest moors about Aberdeen. Prof. Beattie."—Linn. Trans. *l. c.*

C. distans L. Syst. ed. x. 1263 (1760). **1688.** "Hanc speciem primus mihi ostendit D. Martinus Lister, postea ipse observavi loco putrido & palustri prope molendinum Machins mill dictum sesquimilliari à Witham oppido versus Camalodunum."—Ray Hist. ii. 1295.

C. diluta Bieb. Fl. Taur. Cauc. ii. 388 (1808). (*C. punctata* Gaud. (1811). **1838.** "Discovered several years ago by Dawson Turner near Beaumaris, N. Wales (Herb. Smith, Linn. Soc.)."—Hook. Fl. Brit. ed. iv. 339.

C. fulva Good. in Trans. Linn. Soc. ii. 177 (1792). **1792.** "Habitat propè Eaton, juxta Shrewsbury."—Linn. Trans. *l. c.*

C. extensa Good. in Trans. Linn. Soc. ii. 175 (1792). **1792.** "In paludibus prope Harwich."—Linn. Trans. *l. c.* "Found on Cley Beach, Norfolk, June 18th, 1776, by the Rev. H. Bryant."—Sm. Fl. Brit. iii. 992 (1800). Smith cites *Cyperoides echinatum majus* Pet. Concord. Gram. no. 169 (1716), which Petiver found near Cambridge, June, 1715, as a synonym: but *C. extensa* is not recorded for Cambs.

C. flava L. Sp. Pl. 975 (1753). **1597.** "St. George's fields (Surrey) and such like places."—Ger. 16 ("Gr. palustre echinatum").

C. Œderi Retz ex Ehrh. Beitr. vi. 83 (1791). **1802.** "In a Ditch which crosses the Foot path to Stapleford near the Nine Wells."—Relhan, Fl. Cambs. ed. 2, 367, as *C. extensa*, but identified as *Œderi* by Dawson Turner in Bot. Guide, i. 65. Mr. Britten suggests that the *Cyperoides echinatum majus* of Petiver, referred to under *C. extensa*, may be this species.

C. filiformis L. Sp. Pl. 976 (1753). **1777.** "Plentifully at the south end of Air Links. Dr. Hope."—Lightf. Fl. Scot. 553 (*C. tomentosa*).

C. hirta L. Sp. Pl. 975 (1753). **1655.** "Gramen Cyperoides Nortvegicum, ima foliorum basi tantillum lanuginosum . . . . Collegit D. Guil. Boelius, hujus amænissimi studii peritissimus, palustribus Londinensis agri juxta Altam Portam [Highgate]."—Lob. Ill. 51.

C. Pseudo-cyperus L. Sp. Pl. 978 (1753). **1633.** "Pseudo Cyperus. In ditches and waterie places."—Ger. em. 29. "In a ditch between the boarded river & Islington Road."—Petiver in Gibson's Camden (1695).

C. acutiformis Ehrh. Beitr. iv. 43 (1789). (*C. paludosa* Good. (1792). **1716.** "Mr. Ja. Sherard first observ'd this in a pond near Eltham in Kent, about the end of May; and Mr. Rand, in the ditches at the 'King's Arms' against Whitehall."—Pet. Conc. Gram. no. 159. First well distinguished by Curtis as "C. acuta," Fl. Lond. fasc. iv. 61 (c. 1783).

C. riparia Curtis, Fl. Lond. fasc. iv. 60 (c. 1783). **1640.** "Gr. Cyperoides majus latifolium. In our owne land."—Park. Theatr. 1265, 8. In Cambs, "In fossis & vadis amnium pigri orum."—R. C. C. 66 (1660).

C. rostrata Stokes in With. Bot. Arr. ed. 2, 1059 (1787). *C. ampullacea* Good. (1792). **1670.** "In several Pools about Middleton in Warwickshire."—Ray Cat. 145.

C. vesicaria L. Sp. Pl. 979 (1753). **1699.** "In ambulacris Coll. Ædis Christi collectum est."—Morison, Plant. Hist. Oxon. iii. 242.

C. pulla Good. in Trans. Linn. Soc. iii. 78 (1797). **1797.** "In montibus Scoticis. D. Dickson."—Linn. Trans. *l. c.* "Found on Ben Lawers in 1793 by Mr. J. Mackay."—Sm. Fl. Brit. 989.

(To be continued.)

SHORT NOTES.

Rubus Loehri Wirtgen in W. Kent and Surrey.—Two brambles in my collection have recently been identified with this by Rev. W. Moyle Rogers, and are clearly the same as the Herefordshire plants in Sets of British Rubi, mentioned by Rev. A. Ley on pp. 219, 220. The first was collected by Capt. Wolley Dod in Crown Wood, Shooter's Hill (v.-c. 16), during 1894, and was named *R. fuscus* by Dr. Focke; but the finder wrote:—"This form looks very different when growing, chiefly from the colour of its leaves; but there is also an undescribable something about it that makes me think it should deserve a varietal name." The second was met with by Mr. S. T. Dunn and myself, the previous year, close to Woking Station (v.-c. 17); it was remarkable for the small size and greenish white colour of the petals.—Edward S. Marshall.

Isle of Wight Plants.—*Geranium pyrenaicum* was found last summer, by Mr. R. M. Prideaux, growing by the railway between Cowes and Newport, and *Galeopsis versicolor* my wife found growing by the road-side on St. George's Down. Neither of these plants has been hitherto recorded for the Isle of Wight.—Frederic Stratton.

Juncus tenuis Willd.—In February, 1884 (see *Journ. Bot.* 1884, p. 91), I met with one large tuft of *Juncus tenuis*, in a pasture in Herefordshire, bearing about thirty old flowering stems. From that time onwards it produced a lessening number, until in the dry season of 1887 it bore only three or four very short and weakly stems, and then apparently died out, as I have failed to find any trace of it since. So far, my experience supports that of Mr. J. Lloyd Williams, as this particular plant seemed unable to contend with the meadow grasses.—Richard F. Towndrow.

Note on Ceiba (see p. 173).—Dr. Prain has called our attention to his paper on the Flora of Narcondam in the *Journal of the Asiatic Society of Bengal*, vol. lxii. (1893), in which he reduces *Eriodendron* (*Ceiba*) to *Bombax*, and intimates his intention of uniting *Chorisia*, *Pachira*, and *Adansonia* with that genus. He points out, from his knowledge of the living plants, that we were in error in following those authors who have united *Eriodendron orientale* and *E. occidentale.* He states the best one can say of these two species is, that "when dried, their leaves are not very different, and their flowers are very like. *Bombax orientale* Spr. is a tree with tapering trunk much buttressed below, with pale grey bark. In Bengal it loses its leaves in January, flowers in February, fruits in March to April, and gets its new leaves towards the end of April. It has small stipules, pale green leaflets, tawny-yellow shaggily hairy petals, fruit shaped like that of a banana, fruiting calyx with an almost even limb. *Bombax occidentale* Spr. is a tree with a bulging bole, with green bark. In Bengal it loses its leaves in March, and gets its new ones, flowering at same time, immediately. Indeed, the tree does not stand bare at all, for the new leaves are out on some branches before the old have dropped from them. It has huge stipules, silver-grey velvety hairs on its petals, a fruit shaped somewhat like a pear, and a calyx with sinuate dentate limb."—James Britten; E. G. Baker.

Ranunculus tripartitus, DC., in Ireland.—We have received from Mr. R. A. Phillips specimens of *Ranunculus tripartitus*, DC., discovered by him on April 3rd of the present year, occurring plentifully in a very small lake, close to the sea, among the mountainous cliffs to the south of Baltimore, Co. Cork. Mr. Phillips's plant has well-developed capillary submersed leaves, and in all respects closely resembles the plant from the West of France. It is very gratifying to have such good *R. tripartitus* from the British Isles, as Mr. Tellam's plant from Roche, E. Cornwall, though doubtless best included under this species, is not very satisfactory. —H. & J. Groves.

NOTICES OF BOOKS.

Plant Breeding. By L. H. Bailey. London and New York: Macmillan & Co. 8vo, pp. 293.

Prof. L. H. Bailey, the well-known director and experimentalist of the Cornell University, Ithaca, has elaborated, in the form of a handy and well-printed volume, a series of five lectures on the raising of plants by what is perhaps more conveniently than accurately known as artificial means. "Plant Breeding" is the suggestive title of Prof. Bailey's book, which affords profitable reading to the practical gardener, and more especially to the gardener who has a natural inclination for the selection and "crossing" one with another various kinds of plants.

Although botanists have always rent their garments, so to speak, at the production of hybrids, the curious and experimenting gardener has calmly plodded on, mixing one species with another, oftentimes hap-hazard, and quite regardless of the confusion he was creating. One after another long cherished ideas of the botanist were shattered by the results of "crossing," and now a stage has been reached when it is impossible for anyone to say what may not happen. The partitions between what are termed varieties, species, and genera have all been broken down by the hybridist, and although the botanical world may have been thrown into confusion thereby, gardeners feel rather proud of their achievements—at the way in which they have as it were marked out certain courses for nature to follow blindly.

Of course, as Prof. Bailey points out, the hybridist must have some knowledge of the affinities of plants before he can hope to produce any results by transferring the pollen from one flower to the stigma of another. It would never do, for instance, for him to attempt to produce a hybrid between a grass and rose. "The notion," says Prof. Bailey, "is somehow firmly rooted in the popular mind that new varieties can be produced with the greatest ease by crossing parents of given attributes. There is something captivating about the notion. It smacks of a somewhat magic power which man evokes as he passes his wand over the untamed forces of nature. . . . Man must not only practice a judicious selection of parents, but he must constantly select the best from among the crosses in order to maintain a high degree of usefulness and to make any advancement." There is the art of raising new plants in a nutshell, but it comprises a great deal more knowledge on the part of the gardener than appears on the face of it.

The various circumstances which tend to the production of good hybrids are fully and lucidly discussed by Prof. Bailey, and his advice as to what to aim at and what to avoid is good, inasmuch as it will save the gardener who reads his book a great deal of time and disappointment. It would, for instance, be sheer waste of time and energy for one to attempt to raise hybrids from parents which have been crossed over and over again by other operators without result, in the vain hope that *something* would be produced. In the case of Solanums, Prof. Bailey points out that some naturally produce tubers, and others are more adapted for fruit. It would be unwise to breed between tuber and fruit-bearing varieties. "Those ambitious persons who are always looking for a tuber-bearing tomato, therefore, might better concentrate their energies on the potato, for the tomato is not developing in that direction; and even if the tomato could be made to produce tubers, it would thereby lessen its fruit production, for plants cannot maintain two diverse and profitable crops at the same time."

These few extracts will give a faint outline of the information contained in Prof. Bailey's book, which is essentially one for the gardener. The copious index shows what a large number of plants have been brought under the control of the hybridist, and will serve as a valuable guide to would-be operators in this interesting department of plant development.

J. WEATHERS.

ARTICLES IN JOURNALS.

Bot. Centralblatt (Nos. 18, 19).—D. T. MacDougal, 'The Physiology of Tendrils.'

Bot. Gazette (April 25).—A. W. Evans, 'N. American species of *Plagiochila*' (2 pl.). — W. J. V. Osterhout, 'A simple freezing device.'—H. Willey, 'N. American species of *Parmelia*.'—T. Holm, '*Palæohillia*, a problematic fossil plant' (1 pl.). — W. Deane, 'My seedling collection.' — D. P. Penhallow, 'Calcareous Algæ from Michigan.'—T. C. Palmer, '*Isoetes riparia* and *I. saccharata*.'—F. S. Earle, 'Some species of *Meliola*.'—C. L. Pollard, *Phaseolus smilacifolius*, sp. n. — W. H. Scherzer, 'Pebble mimicry in Philippine Island Beans.'

Bot. Notiser (häft. 3).—H. W. Arnell, 'Moss-studier' (cont.).—O. Borge, 'Zur subfossilen Desmidiaceen-Flora Gotlands.' — R. Sernander, 'Några ord med anledning af Gunnar Andersson, Svenska växtvärldens historia.' — N. C. Kindberg, 'Om några Skandinaviska mossarter.' — K. E. Stenström, 'Några Skandinaviska former af *Hieracium Auricula*.'

Bull. Bot. Soc. France (xliii, 1–2: March–April).—E. Prillieux, 'La rhizoctone violette.' — C. Degagny, 'Sur la division du noyau cellulaire.' — M. Cornu, *Schoenlandia*, gen. nov. (Pontederiaceæ).—Id., 'Deux Commélynées d'Afrique.'—M. Gandoger, 'Herborisations en Espagne.' — A. Franchet, 'Quelques Liliacées de la Chine occidentale.' — A. Chabert, 'Un Luzule critique.' — J. Neyrault, *Hypericum humifusum*.

Bull. Torrey Bot. Club (Ap. 30). — A. A. Heller, 'Notes on *Kuhnistera* (= *Petalostemon* auct.) (1 pl.).—J. K. Small, 'Botany of South-eastern United States.' — E. P. Bicknell, Sisyrinchiums of Eastern United States (3 pl.). — F. V. Coville, 'Three Editions of Stanbury's Report.'—A. M. Vail, *Meibomia* (= *Desmodium* auct.).—F. L. Scribner, 'Grass Notes' (1 pl.). — G. V. Nash, 'New or noteworthy American Grasses.' — H. H. Rusby, *Achimenes heppielloides* Fritsch, sp. n.

Gardeners' Chronicle (May 16).—*Sobralia Brandtiæ* Kränzl., sp. n.

Journal de Botanique (May 1, 16).— —. Hue, 'Lichens d'Aix-les-Bains.' — (May 1). L. Sauvan, 'Localisation des principes actifs dans quelques végétaux.'—(May 16). C. Sauvageau, '*Ectocarpus fulvescens*.'—A. Franchet, 'Sur les *Aletris* asiatiques.'

Journ. Linn. Soc. (Bot.: no. 215: May 23). — E. M. Holmes, 'New Marine Algæ from Japan' (6 pl.).—H. N. Ridley, 'Orchideæ recorded from Borneo' (3 pl.).—W. B. Hemsley, 'Some remarkable Phanerogamous Parasites.'

Oesterr. Bot. Zeitschrift (May). — G. Kükenthal, 'Die hybriden der *Carex cæspitosa* und der *C. stricta*.'—K. Polák, '*Senecio erraticus*.' R. v. Wettstein, *Gentiana tenella* and *G. nana* (cont.). —F. Arnold, 'Lichenologische Fragmente.' — O. Kuntze, 'Nomenclatorische Notizen.'

Trans. Linn. Soc. (v. 3: May).—F. W. Keeble, '*Loranthaceæ* of Ceylon' (2 pl.).

BOOK-NOTES, NEWS, &c.

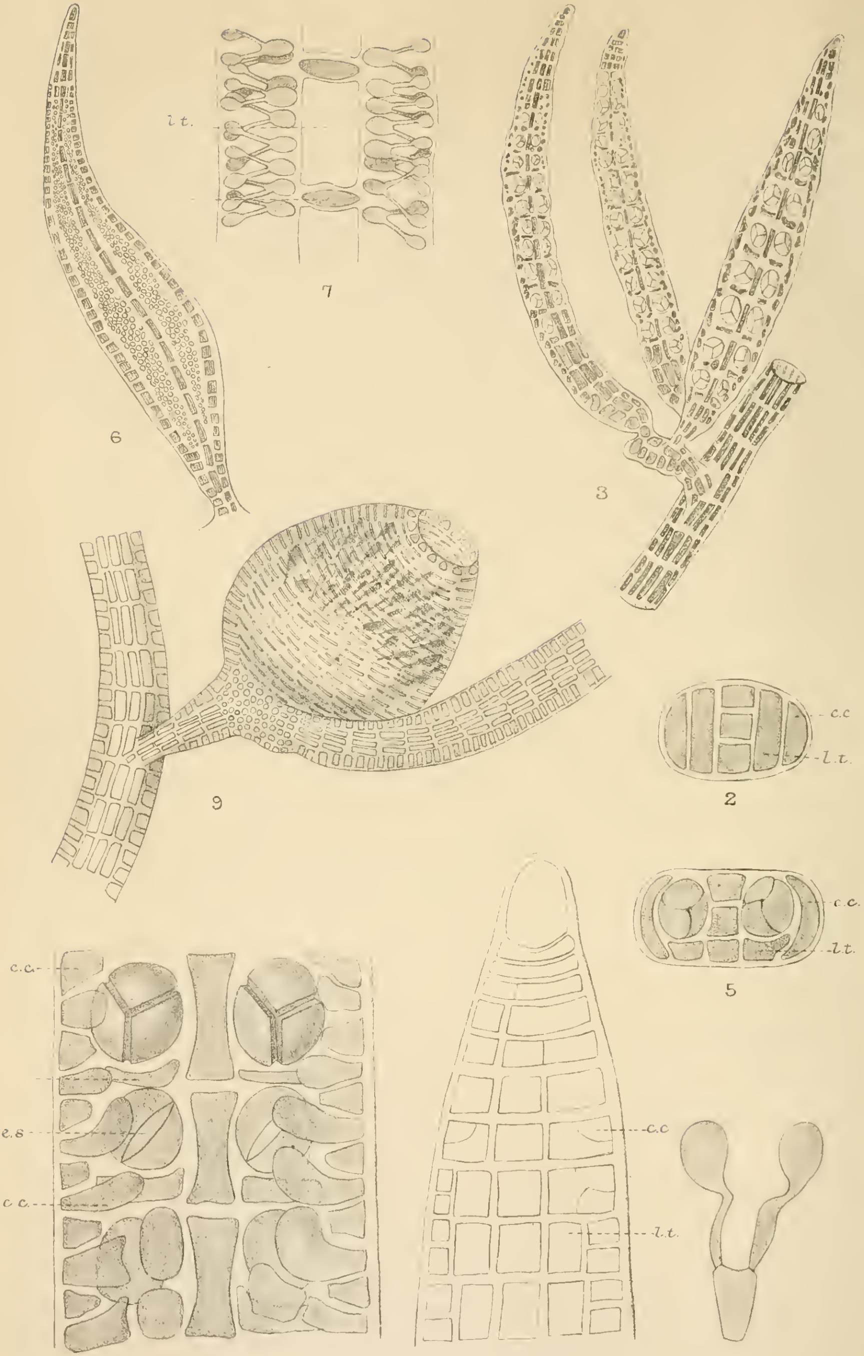
Prof. J. Wiesner sends from Vienna a pamphlet on "The necessity of instruction in Natural History in the study of Medicine." It is a vigorous protest against the threatened "reform" of the medical curriculum in the Austrian universities, involving the removal therefrom of the course of pure science so generally insisted upon in all modern schools.

Prof. E. L. Greene, who is now Professor of Botany in the Catholic University of America, at Washington, has resumed the publication of *Pittonia*, the second volume of which was concluded in 1892. The first part of the third volume contains papers on the Nomenclature of the Fuller's Teasel; on *Sibara*, a proposed new genus of Cruciferæ (to include six species, previously placed in *Arabis*, *Cardamine*, *Sisymbrium*, and *Nasturtium*); on *Langloisia*, a genus proposed for three plants referred by Asa Gray to *Navarretia;* and on some Mexican *Eupatoriaceæ*, with descriptions of several new species in various orders. *Erythea*, of which Prof. Greene was the moving spirit, seems to have come to an end, no number having appeared since December last.

The May part of the *Icones Plantarum* contains some interesting novelties. The new genera described and figured are *Creaghiella* Stapf (Melastomaceæ Oxysporeæ), *Homalopetalum* Rolfe (Orchideæ Epidendreæ), *Pterygiella* Oliv. (Scrophularineæ Euphrasieæ), *Isanochloa* Hook. f. (Gramineæ Andropogoneæ), *Littledalea* Hemsl. (Gramineæ Festuceæ). Mr. N. E. Brown's genus *Platykeleba*, established by him in the *Bulletin of Miscellaneous Information* for 1895 (p. 250) on a plant collected by Baron in Madagascar, is figured: this had been previously sent from Madagascar by Hilsenberg and Bojer; Mr. Schlechter, when naming the British Museum Asclepiads last year, at first proposed to found a genus upon it, but subsequently decided to regard it as a *Sarcostemma*.

Mr. E. P. Bicknell publishes in the *Bulletin of the Torrey Botanical Club* a paper on the Sisyrinchiums of the Eastern United States. Mr. Bicknell follows Mr. Watson in maintaining *S. angustifolium* Miller as the name for the simple-stemmed American plant, but appears to have overlooked Mr. Hemsley's paper in this Journal for 1884 (pp. 108–110) in which this name was re-established. He considers the *S. Bermudianum* of American authors, not of Linnæus, as a distinct species, which he calls *S. graminoides*. By a slip, however, the name where it first appears is printed "*gramnoides*," and we are curious to know whether Dr. Britton's views as to priority of place will induce him to insist on the retention of the name in this, its earliest, form. Another new species is *S. atlanticum*.

The new part (xxi.) of the *Flora of British India* is devoted to the first instalment of Sir J. D. Hooker's important revision of the Indian grasses. It extends to 224 pages, and brings the enumeration down to *Aristida*.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A W van B. del.
R. Morgan lith
West, Newman imp.

Sarcomenia miniata *Ag.*

NOTES ON SARCOMENIA MINIATA Ag.

By Anna Weber van Bosse.

(Plate 359.)

During a trip to South Africa I was fortunate enough to collect at Plettenberg Bay, Cape Colony, a tuft of *Sarcomenia miniata* Ag. bearing many stichidia with tetraspores. I owe to the kindness of Miss Barton two dried specimens of the same plant bearing cystocarps, one of which had also two antheridia. Latterly doubts have been expressed[*] as to the systematic position of *Sarcomenia miniata* and some other species of this genus. I think therefore that an accurate description of the cystocarps and antheridia of this plant may be useful to future students who occupy themselves with this genus.

Sarcomenia miniata was only known from the Atlantic Ocean, and was collected at Cadiz by Cabrera; therefore I was much surprised to find it on the south coast of South Africa, and felt at first some doubt about the identity of both plants.[†] On comparing my plantlets with authentic material, kindly lent to me by Major Reinbold, I felt convinced, however, that *Sarcomenia miniata* was indeed the right name for this South African species. It was collected on rocks a little above low-water mark, where the sea was coming in with heavy rollers, and big waves were breaking on the rocks continually. I mention this because I think that agents of this kind have a great influence on the external habit of seaweeds, and should not be passed over in silence.

The plantlets grow in subglobose tufts. Now and then a single tuft exceeded the length of 1½ or 2 in. mentioned by Agardh. I saw several creeping branches emitting fronds from their dorsal side, and with rootlets growing out from the cortical cells. The length of the cells was generally subequal or only little longer than their diameter, but in a few branches the cells were decidedly longer, twice or even thrice their diameter. At the base of a strong plantlet the lower cells were entirely covered by a layer of thread-like cortical cells that had sprung from the pericentral tubes. This was, however, not the case with fronds that had arisen from creeping filaments; these were bare to the very base. The strong plantlet was evidently trying to fasten itself better to the soil; the fact struck me, as *Sarcomenia miniata* is said to be always ecorticated.

The anatomical structure of *Sarcomenia miniata* may be supposed to be sufficiently known by the descriptions of Agardh[‡] and the drawings of Grunow.[§] The thallus consists of one central tube surrounded by four pericentral ones, two of these latter being furnished with a row of smaller cortical cells along their outer side.

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[*] Grunow, A., *Algen der Novara-Reise*, pp. 92–93.

[†] Recorded by Miss Barton in *Journ. Bot.* 1896, p. 198.

[‡] Agardh, J. G., *Species, Genera, et Ordines Algarum*, vol. ii. p. 1260.

[§] Grunow, *l.c.* plate xi.

pericentral tube. The stem is of a narrow elliptic form, since, seen on a cross-section, there are three cells lying one behind the other in one direction, and five cells in the other. The pericentral cells have not the same morphological value, for a cross-section shows clearly that the diameter of the lateral tubes from front to back is nearly as broad as the diameter of the three middle cells taken together (fig. 2).

Fig. 1 is a diagrammatic drawing of the top of a branch, and shows the way in which the tubes and cortical cells are developed. This process is exactly the same as that described by Prof. Cramer* for the first divisions of the genus *Caloglossa;* the structure of *Caloglossa*, however, being more complicated than that of *Sarcomenia*, the subsequent changes that take place in the segments are different. The initial cell of *Sarcomenia* divides first by a horizontal wall; the segment thus cut off shows first one and then a second vertical partition, dividing the segment in three equal portions. The exact moment when the tangential walls appear, that cut out the front and back pericentral tube, could not be ascertained, but all these divisions take place very quickly one after another. The lateral tubes are afterwards partitioned by two oblique walls extending from the middle of the upper or the lower wall to the middle of the outer wall, and the segments thus cut off form the row of cortical cells. I was anxious to know whether some of the adaptations in *Caloglossa* to prevent the decay of the stichidia after the departure of the tetraspores were to be found also in *Sarcomenia;* my supposition was confirmed for the branches destined to become stichidia; the lateral tubes, after having given off the cortical cells, divide again by a vertical wall into two equal cells. The back one—by which name for clearness' sake I distinguish the cell that will bear no tetraspores—undergoes no further changes. The front one is cut in two by a horizontal wall; the upper cell resulting from this partition becomes the mother-cell of the tetraspores; the lower one is a kind of stalk-cell to the sporangium, and may also serve to consolidate the stichidia (figs. 3, 4, 5).

During this process each cortical cell divides again by an arcuate wall into a small upper and a bigger lower cell, this last one bearing some resemblance to a crescent with rounded horns. After the maturity and escape of the tetraspores, these horns push forth to the empty sporangia from where the tetraspores have fallen out by a slit in the membrane, and dividing themselves give rise to cortical cells that take the place of the sporangia. This has a double advantage for the plant: first, the vegetative life of the stichidia will be lengthened, for these new cortical cells will protect the stichidia from being torn off by the current, which might easily happen after the tetraspores have left the sporangia; and secondly, it must not be forgotten that the branches of *Sarcomenia miniata* have all an acropetal growth. The tetraspores at the base of the stichidia are long ripe, have in fact often left the sporangia, before Two of these cortical cells have the same length as one cell of the

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* Cramer, C., *Ueber Caloglossa Leprieurii* Harv., J. G. Ag. Tab. ii. figs. 1 & 2.

the tetraspores at the top show signs of division. This explains readily the extreme usefulness of such arrangements as tend to consolidate the stichidia.

The cells of the central tube are connected by a very strong strand of protoplasm. The contents of these cells are much more delicate than those of the pericentral tubes, but by the help of this considerable strand of protoplasm they are always easily recognized. Secondary pores and smaller strands of protoplasm connecting the pericentral tubes with each other or with the central tube were also visible.

I believe I saw migrating cells as described by Kolderup-Rosenvinge* for *Polysiphonia*, but I failed to detect a cell-nucleus in the little particles of protoplasm that were lying in the gelatinous layer between the cells. I must therefore leave the question unsettled whether these particles of protoplasm are identical with Kolderup-Rosenvinge's migrating cells.

The branching of *Sarcomenia miniata* is very irregular; the branches arise, as Agardh has already described, from the middle of the stem. Careful examination shows that they are the result of endogenous growth, as described already by Falkenberg† and Ambronn‡ for species of the genera *Rytiphlœa*, *Vidalia*, *Amansia*, and *Polyzonia*. The central tube pushes a branch between the pericentral tubes, which yield to let the young unicellular branch pass. This cell divides by horizontal walls, the first two segments remaining naked, the upper ones surrounding themselves in the usual way by pericentral tubes. The pericentral tubes of the stem from which the branch arose give off a few cells that cover the first naked segments of the branch, but otherwise they undergo no further changes.

On one specimen only of my whole collection could I detect antheridia. The plantlet bore also cystocarps; it is therefore monœcious. The antheridia were found at the base of the stem, and consisted of very small leaflets, borne in the usual endogenous way. The lateral tubes of these leaflets are, as in the case of the branches bearing tetraspores, the cells out of which the propagating organs arise. I have not been able to follow the mode of development from lack of specimens, but figs. 6 and 7 are exact figures of the antheridia as I saw them. I can only suppose that each cell of the lateral tube divides first by a horizontal wall, and that the protoplasmic masses (cf. the figure) seen at the base of a large empty cell are the remnants of the lower or pedicel cells, whose function it probably was to prevent the collapsing of the walls of the cells from which the pollinoids arose. The walls of this little horizontally stretched cell were indistinct, but distinct strands of protoplasm were clinging to it. I could not see what became of them. The contents of the upper big cell had entirely vanished, but on each side articulated dichotomous filaments had developed. They rose a little above the surface of the unchanged middle nerve of the antheridium; this facilitated of course the distribution of the pollinoids, and strengthened my opinion as to the function of the pedicel-cell. The apex of the articulated filaments was in some cases very small, in others larger (from 2, 7 to 8, 1 μ, fig. 8). I saw no pollinoids issuing from the top cells, and do not know whether each is the mother-cell of a single pollinoid or whether they undergo still further changes. The beautiful researches on antheridia by the late lamented Mr. Buffham* show that this is not altogether impossible.

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* Kolderup-Rosenvinge, L., "Sur la formation de spores secondaires chez les *Polysiphonia*," *Bot. Tidskr.* 17 Bd. 1 Heft. Kopenhagen, 1888.

† Falkenberg, "Ueber endogene Bildung normaler Seitensprossen in den Gattungen *Rytiphlœa*, *Vidalia*, und *Amansia*," *Nachr. der Ges. d. Univ. zu Göttingen*, 1869, p. 285.

‡ Ambronn, "Die Art und Weise der Sprossbildung bei den Rhodomeleen Gattungen *Vidalia*, *Amansia*, und *Polyzonia*," *Verhandl. d. bot. Vereins d. Provinz Brandenburg*, 1880, p. 74.

The cystocarps arise about the middle of the branch, generally nearer to its base. I was not fortunate enough to find trichogynes, nor could I distinguish the carpogonium. The youngest stages I saw consisted of three big cells full of protoplasm lying in the centre of the branch at the place of the central tube. These big cells were already surrounded by a low elliptic wall, the future pericarp. The pericentral tubes on one side of the branch had divided by horizontal walls, and the cells resulting from this partition had grown out at right angles on their former longitudinal axis. They had yielded in the middle for the future ostiole, and each cell surrounding this ostiole was an initial cell of the wall of the pericarp. These initial cells were divided by horizontal walls, and each segment was partitioned as in the case of the lateral tubes in the stem by two oblique walls, cutting off two cortical cells. These last ones remain short, but become very broad, and constitute the beautiful symmetric outer wall of the pericarp. The tubes that have given off the cortical cell layer stand apart from one another at the inner side of the pericarp; they remain thin, and each of their cells is twice as long as a cortical cell. Very young pericarps of *Sarcomenia delesserioides* have the same mode of growth, but subsequent divisions make the pericarp of this plant more differentiated.

By the subsequent growth of the procarp tufts of branching filaments arise, the top cells of which produce each a pear-shaped spore, set free by a slit in the membrane. Several spores were lying in the ostiole of the pericarp. When the cystocarp is fully developed it looks as if it were borne on a little stalk, and had been developed at the top of a branch, for the upper part of the branch bearing the cystocarp is pushed aside by the growth of the base of the cystocarp, and looks as if it were an appendage of the cystocarp. This is, however, not the case, all young cystocarps rising from the middle and near the base of the fruit-bearing branch.

Prof. Farlow† has described under the name of *Tænioma Cleve-*

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* Buffham, T. H., "Notes on some *Florideæ*," *Journ. of the Quekett Micr. Club*, vol. ii. ser. 2, pp. 183–190. 1896.

† Farlow, *Proc. Amer. Acad. Arts & Sciences*, vol. xii. p. 236.

landii an alga that resembles our plantlet very much. The only specimen, however, that I have been able to study is barren, and of more robust growth than the South African species; it also lacks its base and root I cannot make out whether it has any creeping branches or a layer of hair-like cortical cells at its base; but the anatomical structure is so exactly alike that, were it not for the enormous distance that separates South Africa from California, the habitat of *Tænioma Clevelandii* Farl., I should feel inclined to sink this species into *Sarcomenia miniata*. For prudence sake, and for lack of the cystocarps, I abstain from doing this now. I hope to receive more *Sarcomenia* material, and may perhaps return to the question of its systematic position at some later time.

Explanation of Plate 359.

Fig. 1. Diagrammatic figure of the upper part of a stem of *Sarcomenia miniata*: *l. t.* lateral tube; *c. c.* cortical cells. 2. Cross-section through a vegetative branch: *l. t.* lateral tube; *c. c.* cortical cells. 3. Branched stichidia with two rows of tetrasporangia 4. Diagrammatic figure of a part of a stichidium with one sporangium bearing tetraspores and two empty ones; the cortical cells, after dividing themselves, push forth to the empty tetrasporangium, and constitute an entire layer of new cells: *c. c.* cortical cells; *e. s.* empty sporangia; *s. c.* stalk cell. 5. Cross-section of stichidia: *c. c.* cortical cells; *l. t.* half of the lateral tube after the first vertical division (the stalk cell is of course invisible in this section); *s.* sporangium. 6. Antheridium. 7. Tangential section of an antheridium, showing the empty mother-cell of the articulated filaments and the stalk cell at the base of each large empty cell; drawn with camera lucida, Oc. 1, Obj. E, Zeiss. 9. A single articulated filament; Oc. 1, Obj. F, Zeiss. 10. Ripe cystocarp of medium size.

PROFESSOR BABINGTON ON RUBUS IN 1891.

[Professor Babington, some years before his death, had nearly completed a work which he hoped to publish as a "Revision of British Rubi." Ill health unfortunately prevented him from finishing it; and so much additional light has been thrown on the subject since he was last able to deal with it (*i.e.* in 1890 or 1891), in consequence of Dr. Focke's visits to this country and the increased activity of British students of the genus, that very much of what he left in MS. is now necessarily out of date. To so great an extent, indeed, is this the case, that I believe no British batologist who read it through could desire the publication of the work as it has been left. I have ventured, however, to recommend the printing of the completed introduction, as well for its own intrinsic value as on account of the position the Professor so long occupied as our greatest authority and most patient teacher and guide in our study of these puzzling plants. No British botanist who realizes even partially the invaluable work done by him throughout the course of his long professorial career can, I think, fail to be both interested and instructed by this fragment of his last work for us. With Mrs. Babington's permission, I have also extracted from the body of the work the Professor's account of *R. lentiginosus* Lees. I had thought this too obscure a form to claim a place in our *Rubus* list; but I have now had the advantage of seeing Lees's authentic specimens in the Cambridge Babington Herbarium, and I find them identical with the plant described by Dr. Focke, and published only last year in Griffith's *Fl. Angl. & Carnarv.* as *R. cambricus* Focke. This latter name must now of course give place to *R. lentiginosus* Lees, published so long ago as 1849 in Steele's *Handbook*, p. 60. Dr. Focke would place it next to *R. Questierii* Lefv. & Muell.—W. MOYLE ROGERS.]

PREFACE.

THE time seems to have arrived when a new treatise on the British Rubi is required, and as I am told that this is expected from me, I have endeavoured to prepare one. It does not supersede my *British Rubi*, the object of which was to ascertain the plants intended by British authorities up to the time (1869) of its publication. My chief object now is to endeavour to identify our plants with those of the continental authors, especially Focke and Genevier.

I now possess the means wanting to me in 1869, for the whole herbarium of Genevier has come to Cambridge, and through the kindness of Dr. Focke I possess named specimens of most of his species; many others which he could not give me have been obtained by the liberality of English botanists, who have had their plants named by him. I feel therefore that probably the duty of preparing a new *British Rubi* has really devolved upon me. But the further I go in the study of our native plants the clearer it becomes that we really are far from truly understanding them. As my former book was only provisional, this also cannot claim any higher position. If it helps forward those who are studying this difficult genus, my wishes are fully met.

Not only is much continued study of the plants required before we can decide what forms are to be accepted as species, what are permanent varieties, and what are only variations which may be expected to revert when propagated by seed to the more permanent forms, and also which of them may be fairly considered as the result of hybridization, but a careful study of them all in the living state must be made. Unfortunately living in a district where Rubi are far from abundant, it has been out of my power to do this, and therefore I may, nay must, have fallen into error in many cases. Those botanists who are more favourably situated must be looked to for making the necessary corrections. This book can only be considered as preliminary, very far from being a final, determination of the Rubi to be fouud in Britain. I have therefore named and described many forms which seem to be well marked, but may not prove to be permanent after the requisite study has been bestowed upon them in their native places of growth.

Focke justly remarks that "Very few botanists recognize the fact that there are in Europe at the present time perhaps fifty times the number of apparently permanent forms of plants reproduced from seed than we find species recorded in books. According to my view, it is therefore erroneous to take permanency from seed as a decided criterion of species."—*Focke*, pp. 89, 90. He also justly remarks that "it is only by means of minute descriptions that we are able to recognize with certainty the various forms of plants. Those who rely too much on single characters for the recognition of species in very short diagnoses or tabular forms will only too often find themselves in a maze of error, for there is not one single character that can be considered as absolutely permanent and reliable."—*Focke*, p. 91.

INTRODUCTORY.

After much consideration I have arrived at the conclusion that Dr. Focke's arrangement is more satisfactory than that of Genevier, for it does not separate allied plants so much. Genevier seems to have wished to use an artificial arrangement, which he probably believed to be more convenient for the readers of his book, than a more natural one. Although he has to some extent succeeded, he has far from wholly done so. I have therefore chiefly followed Focke in this essay; merely deviating from him in those cases where our views do not quite agree.

M. Camus, in his recently published *Catalogue des plantes de France, de Suisse, et de Belgique* (1888), has made a bold attempt, with some success, to form what may be called aggregate species. I fear that we can only approach to the formation of such definite and natural collections of named forms at present. I have endeavoured so to arrange our forms, as far as they are yet determined, for there may probably be many more than we know at present, in as convenient and at the same time natural a manner as is in my power. It will be seen that the present arrangement is fundamentally the same as I have always followed, although it will be new to our botanists in some few points. I do not see how to improve it. It must be always remembered that a linear arrangement is necessarily unnatural; for the affinities of the different plants do not lie in only two, but in many directions. We must therefore not be surprised by finding plants, which are manifestly allied, placed in distinct groups, when they seem, taking all the characters into account, to be more fitly there placed than with the others to which they show a relationship. Of course this adds much to the difficulty of arranging them upon anything approaching to a natural system; but we are obliged to employ a linear arrangement.

Gandoger, in his remarkable *Flora Europæa*, tom. viii., divides the genus into three, and has taken much pains to reduce the number of species by arranging under each of his species those of other authors which he combines with them severally. To this attempt I have paid much attention, but have not thought it desirable to adopt the new genera into which he divides *Rubus*. Unfortunately he gives no definition of these genera, nor of the species, although he points out innumerable varieties under each of the latter.

As Dr. Focke remarks, there seems to be endless variation amongst brambles, and therefore endless forms which may and perhaps ought to be named and defined. It matters little whether we call them species or varieties, or only forms; for who can define a species now that we have had to give up the old views that all species were intended to be permanently distinct? Now that we know how extensively slightly varying forms are reproducible from seed, we must either accept each of these forms as an aboriginal species, or give up the theory that those first created have been kept specifically distinct until the present time. We who have been trained to hold this latter view find it difficult to give up. But the search after truth leads us necessarily to accept the former view. Although therefore I have called many species forms in this essay, I must not be supposed to state or believe that their characters do not vary to a greater or less extent under changed circumstances of climate or locality. We find that very similar plants gathered in the north or west are often only very similar, although we give them the same names. For this reason, when we gather a plant in Devon or Cornwall, we look to M. Genevier's elaborate book for its name, when working in the east or north-east of England and Scotland our attention is necessarily directed to the valuable descriptions of Dr. Focke, or the Scandinavian botanists; and even then we must not always expect the plants to be absolutely identical. In accepting nomenclature, I quite agree with Dr. Focke that we are not obliged to "waste our time in studying the foolish writings of every ignorant and mischievous manufacturer of names" (*Journ. Bot.* 1890, 98). I may quote another remark of the same author which seems to be very applicable to what is being attempted in botanical nomenclature. He says: "We have far too many botanical rag-collectors, who, in following out their view of priority, penetrate everywhere, dragging matters again into the light of day which had better have been left in the shades of night" (Focke, *Syn.* p. 58). It is a matter of mere convenience what plan of nomenclature we follow. Calling plants species or subspecies makes very little difference, for we have to define the plants just as much on one plan as on the other. If we are to advance our knowledge and ascertain the extent of variation of each form (and that is, I conceive, our duty as students), we may fairly say with Lindley (*Synopsis*, ed. 1, ix.) that "our daily experience shows that excessive analysis is far preferable to excessive synthesis."

As has been remarked, it is quite apparent that there are very many more forms of plants that are continued by seed than we have been accustomed to believe; and that we must give up the favourite idea that those are distinct species which are easily and fully reproducible by seed. We must also give up the once prevalent view that a single marked character may always be depended upon as the mark of a species. After much study we learn how difficult it is to define almost any one of the recognised species, so as to include all its possible forms, and so as to separate it clearly from all possible forms of allied plants.

In this book I do not pretend to have entered into that difficult subject with the elaborate detail which has been so well carried out by Dr. Focke; but I have done so rather more than is usual with other rubologists. Neither have I attempted to form an analytical table such as that of Genevier; for I have not found even that, with all its excellence, to be a true and certain guide. And if not so, an analytical table is very liable to lead us astray. As I have said in my *Manual of British Botany*, such a Synopsis "must be used with caution, as a very slight error will totally mislead."

We are accustomed, and perhaps advisedly, to look for such distinctive marks as are afforded by the direction of the stem: (1) either quite or nearly upright; (2) more or less highly arching, but turning down at the end in the autumn so as to reach the soil, and then penetrating into it and throwing out roots, and thus forming a new centre for the growth of the following year; (3) or rising with a very small arch and then becoming prostrate, and often following the inequalities of the ground with singular exactness for a considerable distance, but in the late autumn again forming a small arch so as to present its growing point directly towards the earth and penetrating into it, and rooting there as in the former case. It often happens that these naturally prostrate plants rise to a considerable height by being supported by the neighbouring shrubs; and in such a case they treat the top of a hedge as if it was the surface of the ground, and run along it for a considerable extent; in such cases the end frequently is not able to reach the earth before being killed by the cold of winter: for this condition I have with Focke used the term *scandent*.

The form of the terminal leaflet has been justly much trusted by us. The form and character of the panicle, or rather inflorescence, and direction of the sepals require much attention.

Until recently we have in this country systematically neglected the valuable characters which appear to be afforded by the colour of the different parts of the flower, and their relative proportions and direction. We had been taught to consider such points as undeserving of attention, from being too variable to be of any use. The colours are apparently somewhat variable, but less so than we have been led to suppose; but their proportions and direction in the several stages in the course of reproduction seem to be very constant. It has been said that the relative length of the stamens and styles is the result of dimorphism. It is doubtless so in many plants, but observation has not led rubologists to the conclusion that such is the case amongst Rubi. It would appear that the dehiscence of the outer ring of anthers at the time when the stigmas are ripe affords a sufficient security for cross-fertilization; the fertilization has usually taken place before the inner rows of stamens have produced any pollen; but insects continue to frequent the flowers, and convey the pollen of these later stamens to another flower, having already done this with the product of the first ripened anthers.

It is very much to be wished that collectors would make a note of the characters afforded by the flowers, as well as record the direction of the growing stem; as the want of such information renders their specimens of very much less value. I have been as much at fault as others in former years, and thus a considerable part of my collection consists of specimens scarcely determinable.

The points which seem to require especial attention are the direction of growth of the barren stem of the year, the form of its transverse section, and its armature; also when leaves are mentioned without any distinction, those found on that stem are intended. In the description of those leaves attention should be paid to the stalked or sessile state of the leaflets, especially the lower or outer pair; the form of the terminal leaflet, all parts of it being considered; and the relative length of it and its partial petiole; and the character of its toothing. The form and structure of the panicle is also very important; the form and direction at different stages of the sepals and their armature; the length and direction of the stamens relatively to the pistils and their colour, and that of the petals. Colour is usually considered by botanists to be of very little value, but it seems to be important and often quite permanent in many Rubi.

There is also another point concerning which I know very little, which our great masters in this study consider of value; I mean the presence or absence of hairs on the young germens. It will be seen that many of these things can only be observed on the living plant; it is therefore most important that they should be noted at the time when the specimen is collected. The want of this care on the part of collectors has caused exceeding difficulty in correctly naming many of their specimens which may be in most other respects well preserved.

It has been well remarked by Weddell (*Ann. Sci. Nat.* sér. 6, ii. 356) that, "Except in a very few cases, it is impossible to distinguish exactly one species from its neighbours by one single character alone." This is the case in all groups where the species are numerous and closely allied, and in such cases we are deprived of the use of analytical keys such as that prepared with so much care by Genevier. In almost all cases there are intermediate forms which are not discoverable by them. Also they require the presence of much knowledge which is often absent when the key is brought into use. I refer to such points as (1) the direction of barren growing stem of the year; (2) the form and especially the colour of the petals; (3) the length and direction of the stamens; (4) the direction of the sepals both in the flower and with the fruit.

The question of nomenclature is very difficult. We have been used primarily to look to the *Rubi Germannici* as a great authority. But there a difficulty meets us. The descriptions and plates do not always seem to correspond. The two authors appear to have worked independently. The specimens named by Nees for Leighton have rather confused our ideas instead of clearing them. This is now more apparent since Banning and Focke have determined thirty-three out of the forty-two species of Weihe "with absolute certainty." The latter distinguished botanist has cultivated many of them, and described them with remarkable care in his Synopsis. He also holds as I do that it is not advisable, nor for the promotion of science, to drag into the light of day obscure matters which had better have been left in the shades of night. Thus names buried in little-known tracts or neglected books had better not be hunted out to replace universally recognised names, however much it may seem to be required by the rigid application of laws of nomenclature.

The great variability of some "species" causes much trouble to the describer of plants. Many of these forms seem to retain, even from seed, marked and often striking peculiarities, and deserve distinctive names, although we can hardly call them species. Hybrids also seem to be not very uncommon, and when their parents can be discovered they are well deserving of notice. But such plants often are mistaken for species, for, owing to the way in which brambles increase by offsets, one of them may be found covering a large space, although possibly never producing ripe seeds. Such ought to be described, but doubtful isolated plants should be neglected until we can learn more about them, and that seems to be the duty of the botanist who observes them in a living state.

RUBUS LENTIGINOSUS Lees. Stem "suberect," furrowed upwards, slightly hairy. Prickles conical, slightly declining from dilated compressed base, on angles. Leaves 5nate-digitate. Leaflets thin plicate, not imbricate, doubly and irregularly serrate, green, nearly glabrous, but slightly hairy on veins beneath; *terminal* 2–3 times as long as its petiole, *obovate-acuminate*, narrowed and scarcely notched below. *Branches* of rather long narrow leafy panicle *ascending*, *racemose*, its rachis and peduncles pilose, not felted, with many strong declining or deflexed prickles. *Sepals* oval, linear-pointed, slightly setose, *aciculate, adpressed to fruit.*

R. lentiginosus Lees in Steele, 60 (1849); *Phytol.* iv. 927.

R. affinis, *β. lentiginosus* Bab. *B. R.* 72.

The stems apparently do not root at end, but the plant can hardly be placed with the *Suberecti.* It seems far more nearly allied to *R. Lindleianus*, but is abnormal in respect to stem among *Rhamnifolii.* The panicle-branches have a long naked unbranched base as in *R. Lindleianus*, and the rachis has many rather strong deflexed prickles. I have no certain knowledge of the relative lengths of stamens and styles, but apparently the former exceed the latter.* This is an interesting plant as connecting the two sections, but being apparently far more allied to the plants included in *Rhamnifolii* than to *Suberecti.*

Hab. Capel Curig (*Lees*) and Aber (*Bloxam*) and Llanberis (*J. H. Lewis*). Near Plymouth, Devon (*Briggs*).

Mr. Lees says in the *Phytologist* that the flowers are in general small, and the whole plant weak, yet the stem is very prickly, and the points of the prickles are sharp and attenuated. The stem seems to be constantly suberect, but bent to the ground with the flower-shoots. Leaves sometimes 7nate. Panicle flexuose on luxuriant plants, with many alternating axillary racemes of small flowers. Peduncles and bracts covered with long spreading hairs, with a few glands (setæ) on the latter. Sepals patent with flower and young fruit, then becoming loosely reflexed. Petals very small. Stamens and styles pale green.

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* "Stamens and styles about equal."—*Focke.*

LICHENES ANTILLARUM A W. R. ELLIOTT COLLECTI.

Exponit Edv. A. Wainio.

(Concluded from p. 266.)

6. Pseudopyrenula.

1. P. (Trypethelium) eluteriæ (Spreng.) Wain. Étud. Brés. ii. 204. Ad corticem arborum in Anguilla in India Occidentali (n. 71 et 76).

2. **P.** (Trypethelium) **degenerans**, sp. n. Thallus crassitudine mediocris, pallidus aut passim fuscescenti-pallidus, continuus, lævigatus, nitidulus. Apothecia pro majore parte irregulariter aggregata et pseudostromatibus plus minusve distinctis, sæpe satis obsoletis, parum elevatis, difformibus, basi in thallum sensim abeuntibus, extus et intus fuscescentibus aut fusco-nigricantibus, materiam nullam ochraceam continentibus immersa, ostiolo nigro, sæpe leviter impresso indicata. Perithecium globosum, circ. 0·3 millim. latum, fuligineum, integrum, crassum. Paraphyses ramoso-connexæ. Sporæ 8næ, oblongæ, apicibus obtusis aut rotundatis, decolores, 3-septatæ, long. 0·025–0·028, crass. 0·010–0·011 millim., loculis lenticularibus. Ad corticem arboris in Laudat (1700 ped. s.m.) in Dominica. Secundum descriptionem affinis est *T. infuscatulo* Müll. Arg. Pyr. Cub. 389 (sporis muralibus ex Nyl. et Hue, Lich. Exot. 302), at annulo ostiolari nullo.

3. P. (Trypethelium) tropica (Ach.) Müll. Arg.; Wain. Étud. Brés. ii. 210. Ad corticem arboris in Anguilla in India Occidentali (n. 78).

4. **P.** (Heterothelium) **endoxantha**, sp. n. Thallus endophlæodes, albidus, lævigatus, nitidulus. Apothecia solitaria aut parce confluentia, numerosa, verrucas 0·7–0·5 millim. latas, hemisphæricas aut subconoideas, atras, nitidiusculas, haud umbilicatas formantia. Perithecium compresso-subglobosum aut hemisphæricum, fuligineum, vulgo dimidiatum aut rarius integrum, basi tenue aut vulgo deficiens. Nucleus subglobosus aut hemisphæricus, luteus, KHO purpureus. Paraphyses ramoso-connexæ. Sporæ 8næ, decolores, 3-septatæ, long. 0·030–0·040, crass. 0·009–0·010 millim., fusiformi-oblongæ, apicibus obtusis, loculis anguloso-lenticularibus. Ad corticem arboris in Morne Anglais in Dominica. Affinis est *P. subgregariæ* Müll. Arg. (Wain. Étud. Brés. ii. 213), a qua apotheciis nudis, emersis, et sporis majoribus differt.

7. Thelenella.

1. **T.** (subg. Euthelenella sect. Clathroporina) **turgida**, sp. n. Thallus crustaceus, sat tenuis, membranaceo-obducens, fragilis, continuus, verruculoso-inæqualis, demum pustulato-rugosus et adflato-instratus et substrato laxe affixus, glaucescenti-pallidus vel pallide albido-glaucescens, subtus nigricans, hypothallo cinereo-nigricante anguste limitatus. Apothecia thallo immersa, infra thallum subglobose deorsum prominula, supra thallum ostiolo testaceo aut fuscescente parvulo indicata, thallum haud superantia

aut raro verrucas thallo obductas formantia. Perithecium globosum, 0·9–0·8 millim. latum, pallido-fulvescens. Nucleus iodo non reagens. Paraphyses numerosæ, gelatinam abundantem percurrentes, simplices aut basi raro parcissime ramoso-connexæ. Sporæ 4næ aut rarius in eodem apothecio 2næ, decolores, long. 0·074–0·084 (raro –0·040) millim., crassit. 0·028–0·034 (raro –0·022) millim., membrana crassa (halone) præditæ, fusiformes, apicibus obtusis, murales, cellulis numerosissimis, iodo non reagentes. Gonidia chroolepoidea. Ad truncum delapsum prope Laudat in Roseau Valley in Dominica (n. 136). *T. olivaceæ* (Müll. Arg.), Lich. Beitr. n. 542, affinis.

2. **T.** (subg. Euthelenella sect. Microglæna) **scopularis**, sp. n. Thallus crassitudine mediocris aut sat tenuis, areolato-diffractus aut sat continuus sordide cinerascens aut cinereo-glaucescens, sat opacus, iodo non reagens. Apothecia verrucas 0·4 (–0·3) millim. latas, hemisphæricas, elevatas, basi abruptas aut rarius leviter constrictas, thallo obductas concoloresque aut apice obscuriores formantia. Perithecium globosum, inferne albidum, parte superiore plus minusve late fusco-nigricans et KHO violascens, interdum apice leviter denudatum, basin versus amphithecio gonidiifero obductum, superne amphithecio albo hyalino gonidiis destituto obvelatum. Nucleus iodo non reagens (metaplasma ascorum vinose rubens). Paraphyses ramoso-connexæ. Sporæ 8næ, distichæ, decolores, long. 0·027–0·032 millim., crass. 0·013–0·015 millim., membrana leviter incrassata (halone) præditæ, ellipsoideæ aut raro ovoideæ, apicibus rotundatis aut altero apice obtuso, murales, cellulis numerosis, in seriebus transversalibus circ. 8–9 (parum regularibus). Gonidia protococcoidea. Ad rupem ad Boery River in Dominica (n. 155). Cum *T. saxicola* (Müll. Arg.), Diagn. Lich. Socotr. 15, et *T. brasiliensi* (Müll. Arg.) est affinis.

3. T. (subg. Euthelenella sect. Microglæna) brasiliensis (Müll. Arg.) Wain. *Microglæna* Müll. Arg. Lich. Beitr. n. 1456. Supra rupem in Château Belair in St. Vincent una cum *Placodio diplacioide* Wain. Thallus iodo non reagens. Apothecia apice KHO non reagentia. Nucleus iodo non reagens (metaplasma ascorum vinose rubens). Perithecium albidum. Paraphyses ramoso-connexæ. Sporæ 8næ, decolores, long. 0·022–0·035, crass. 0·010–0·014 millim., halone nullo indutæ, seriebus transversalibus cellularum circ. 10–8. In *T. subluridellam* Wain. Etud. Brés. ii. 217, transire videtur.

4. **T.** (subg. Euthelenella sect. Microglæna) **Elliottii**, sp. n. Thallus sat tenuis aut mediocris, pallido-glaucescens aut sordide albido-glaucescens, nitidiusculus aut sat opacus, subcontinuus, iodo cærulescens. Apothecia verrucas 0·3–0·4 millim. latas, hemisphæricas aut parum elevatas, thallo omnino obductas, thallo concolores aut apice cinerascentes obscuratasve formantia. Perithecium globosum, pallidum, superne dilute fuscescens. Nucleus iodo non reagens. Paraphyses ramoso-connexæ. Sporæ 8næ, demum dilute fuscescentes, long. 0·018–0·022, crass. 0·007–0·010 millim., murales, cellulis minutissimis, numerosis, ellipsoideæ aut oblongæ. Ad lapides in Fort Charlotte in Kingstown in St. Vincent (n. 259 pr. p.)

una cum *Lecidea variabili*, cet. Habitu subsimilis est *T. brasiliensi* Nyl. Gonidia hymenialia nulla. Gonidia thalli protococcoidea, simplicia.

5. T. (subg. EUTHELENELLA sect. MICROGLÆNA) GEMINELLA (Nyl.) Wain. *Verrucaria* Nyl. Exp. Pyrenoc. 40; Fl. 1858, 381. *Polyblastia* Müll. Arg. Lich. Beitr. n. 47 (*gemella*), 490. Ad corticem arboris in Château Belair in St. Vincent (n. 446). Perithecium integrum, fuligineum, depressum. Paraphyses ramoso-connexæ. Nucleus iodo non reagens. Sporæ decolores, 2næ, halone indutæ, murales, long. 0·036–0·040, crass. 0·016–0·020 millim.

8. PORINA.

1. **P. dominicana**, sp. n. Thallus crassitudine mediocris aut sat crassus, areolatus vel rimoso-areolatus, areolis contiguis, angulosis difformibusque, circ. 1·5–0·5 millim. latis, lævigatis, nitidiusculis, argillaceo-pallidis, hypothallo indistincto. Apothecia thallo immersa, macula parva nigricante indicata aut verruculas parvulas, parum elevatas, thallo obductas, interdum formantia. Perithecium albidum, apice nigricans. Nucleus iodo non reagens. Paraphyses simplices aut pr. p. parce ramoso-connexæ. Asci clavati. Sporæ 8næ, decolores, fusiformes, apice superiore obtuso, apice inferiore caudato-attenuato, long. 0·035–0·038, crass. 0·005–0·007 millim., 8–9-septatæ, loculis cylindricis. Stratum corticale thalli et amphithecium iodo vinose rubens. In rupe ad Bath Estate in Dominica, una cum *Placodio diplacioide* et *Lecanora prosecha*. Cum *P. Tonduziana* Müll. Arg. Lich. Costar. ii. 167, *P. pelochroa* Müll. Arg. Lich. Beitr. 647, et *P. callosa* (Krempelh.) Fl. 1876, 526, comparibus, at ab iis bene differens. Ad sect. *Segestriam* (Fr.) Wain. Étud. Brés. ii. 220, pertinet.

2. P. MASTOIDEA (Ach.) Mass.; Wain. Étud. Brés. ii. 221. Ad corticem arborum in Morne Couronne in Dominica (n. 164) et ad Château Belair in St. Vincent.

3. P. PHÆA (Ach.) Müll. Arg. Lich. Beitr. n. 872. *Verrucaria* Ach. Syn. Lich. 88 (secund. herb. Ach.); Nyl. Lich. Exot. 233; Hue, Lich. Exot. 296. Thallus tenuis, sat lævigatus, nitidiusculus, glaucescens aut olivaceo-glaucescens, hypothallo indistincto. Apothecia conceptaculis pycnoconidiorum crebris immixta, verrucas hemisphæricas vel conoideas, 0·2–0·25 millim. latas, cinereo-nigricantes, opacas, basin versus amphithecio thallino obductas, parte superiore majore minoreve amphithecio evanescente obvelatas, formantia. Perithecium elevato-hemisphæricum, fuligineum, integrum, at basi tenue et dilutius coloratum. Paraphyses simplices. Asci cylindrici. Sporæ 8næ, monostichæ, decolores, ovoideo-fusiformes, 1-septatæ, medio haud constrictæ, halone nullo indutæ, long. 0·008–0·009, crass. 0·002–0·0025 millim. Pycnoconidia long. 0·007, crassit. 0·0015, oblonga, vulgo 3 guttulas oleosas continentia. Conceptacula circ. 0·110 millim. lata, hemisphærica, fuliginea, integra. Ad corticem arboris in Kingstown in St. Vincent. Etiam in specimine originali in herb. Ach. apothecia conceptaculis pycnoconidiorum immixta sunt.

4. P. EPIPHYLLA Fée; Wain. Étud. Brés. ii. 226.

V. PRÆSTANS (Nyl.) Wain. *Verrucaria præstans* Nyl. Lich. Angol. (1869), 15 (conf. Müll. Arg. Lich. Beitr. n. 653). Verrucæ apotheciorum vertice testaceæ aut pallidæ. Ad folia arborum in Richmond Valley in St. Vincent (n. 353) et in Dominica (n. 517 pr. p.).

V. ATRICEPS Wain. Verrucæ apotheciorum vertice fusco-nigricantes. Ad folia arboris in Dominica (n. 517 pr. p.) una cum v. *præstante* Wain.

5. P. NITIDULA Müll. Arg. Lich. Beitr. (Fl. 1883), n. 665. *Phylloporina* Müll. Arg. Lich. Epiph. (1890), 22. Thallus albido-glaucescens aut rarius olivaceo-glaucescens, effusus, hypothallo indistincto. Apothecia verrucas 0·2–0·15 millim. latas, hemisphæricas, elevatas, basi anguste amphithecio thallino, thallo concolore, obductas, parte superiore atro, nitidulo, denudato, vulgo rotundato instructas, formantia. Perithecium cyaneo-fuscescenti-fuligineum, depresso-subglobosum, integrum, basi tenue. Paraphyses simplices. Asci ventricosi. Sporæ 8næ, polystichæ, decolores, fusiformes aut fusiformi-oblongæ, 5 (–3)-septatæ, long. 0·018–0·022, crass. 0·004–0·005 millim., apicibus obtusis. Gonidia phycopeltidea. Ad folia arboris in Bonhomme Woods in St. Vincent, una cum *P. rufula*, cet. (n. 351 pr. p.).

6. P. RUFULA (Krempelh.) Wain. *l. c.* 227. Ad folia arborum in Dominica et ad Bonhomme Woods in St. Vincent (n. 351 pr. p.).

7. P. DILATATA Wain. *l. c.* Ad folia filicis in Morne Cochon (1200 ped. s. m.) in St. Vincent.

8. **P. Vincentina,** sp. n. Thallus tenuissimus, cinereo-glaucescens, ad ambitum crebre angustissime laceratus, hypothallo indistincto aut inter lacinulas thalli subdistincto nigricanteque. Apothecia verrucas 0·4–0·3 millim. latas, conoideo-hemisphæricas, elevatas, maxima parte amphithecio thallino, thallo subconcolore, obductas, vertice atro, nitidulo, denudato, subumbonato instructas, formantia. Perithecium fuligineum, dimidiatum, basi deficiens. Paraphyses simplices, sat numerosæ. Asci cylindrici. Sporæ 8næ, distichæ, decolores, fusiformes aut oblique fusiformes, 1-septatæ, long. 0·013–0·017, crass. 0·002–0·003 millim., medio sæpe lævissime constrictæ, apicibus vulgo acutis. Gonidia phycopeltidea. Ad folia arboris in Bonhomme Woods in St. Vincent. Habitu subsimilis est *P. cærulescenti* (Müll. Arg.) Wain. (Müll. Arg. Lich. Beitr. n. 1565), at hypothallo minus evoluto et sporis longioribus ab ea differens. Etiam *Strigulam subtilissimam* (Fée) Müll. Arg. in memoriam revocat, at hujus laciniæ magis elongatæ et hypothallus magis distinctus et sporæ breviores.

9. STRIGULA.

1. S. COMPLANATA (Fée) Müll. Arg. Pyr. Cub. 380; Pyr. Féean. 4; Lich. Beitr. n. 1569. *Phyllocharis complanata* Fée, Ess. Crypt. Ecorc. p. xcix, tab. ii. fig. 3.

Var. thallo plagulas suborbiculares, subintegras, transversim undulatas formans. Ad folia in Bonhomme Woods in St. Vincent. Thallus parce pilosus. Sporæ long. 0·009–0·007, crass. 0·004–0·003 millim., ovoideæ aut oblongæ, 1-septatæ, ad septam leviter constrictæ, apicibus rotundatis. Apothecia circ. 0·4 millim. lata. Asci cylindrici. Nimis parce obvia.

2. S. ANTILLARUM (Fée) Müll. Arg. Pyr. Cub. 379; Pyr. Féean. 5. *Melanophthalmum antillarum* Fée, Ess. Crypt. Ecorc. p. c, tab. ii. fig. 2. Ad folia filicis in Morne Cochon (1200 ped. s. m.) in St. Vincent. Parce obvia.

3. S. SUBTILISSIMA (Fée) Müll. Arg. Lich. Beitr. n. 678, n. 1573; Pyr. Féean. 6. *Racoplaca subtilissima* Fée, Ess. Crypt. Ecorc. p. xcix, tab. ii. fig. 5. Ad folia in Bonhomme Woods in St. Vincent. Parce obvia.

10. ARTHOPYRENIA.

1. **A. porospora**, sp. n. Thallus tenuissimus, partim epiphlœodes, albidus aut sordide albicans, opacus. Apothecia verrucas hemisphæricas, 1·2–0·8 millim. latas, nigras, vertice convexas, opacas formantia. Perithecium depresso-globosum, fuligineum, dimidiatum, basi anguste deficiens. Nucleus subglobosus aut depresso-globosus, albus, oleosus, iodo non reagens (metaplasma ascorum vinose rubens). Paraphyses ramoso-connexæ, numerosæ. Asci ventricoso-clavati. Sporæ 8næ, distichæ, long. 0·042–0·046, crass. 0·016–0·024 millim., ovoideo-ellipsoideæ aut ovoideo-oblongæ, 1-septatæ, septa vulgo fere in medio, membrana bene incrassata (halone indutæ), medio leviter constrictæ, apicibus vulgo obtusis (aut apice crassiore rotundato); in apice crassiore aut vulgo in ambobus apicibus cavitas sporarum in sinum appendicularem sive porum clausum fundo rotundato instructum latum continuata. Gonidia chroolepoidea. Ad corticem arboris in Morne Trois Pitons (4500 ped. s. m.) in Dominica. Cum *A. gemmata* (Ach.) affinis, sed apotheciis et sporis majoribus, ascis ventricosis, et sporis poro clauso instructis ab ea differens.—*Didymella cinchonæ* (Ach.) Wain. Étud. Brés. ii. 233, ad fungos pertinens, ad corticem arboris in Roseau Valley (n. 118) in Dominica. *Trichothelium minus* Wain., item ad fungos pertinens, supra folia arboris parcissime ad Bonhomme Woods in St. Vincent lectum est. Mycelium partim supra thallum alienum gonidia phycopeltidea continentem, partim supra epidermidem folii crescens. Perithecium circ. 0·15 millim. latum, superne pilis radiantibus, apicem versus cinerascentibus, annulum formantibus ornatum, fuligineum, basi dilatatum, integrum (basi tenue). Nucleus subglobosus. Paraphyses simplices. Sporæ 8næ, decolores, fusiformes, long. 0·025–0·030, crass. 0·006 millim., 5-septatæ. Ad hoc genus, ad fungos relegandum, etiam *Trichothelium epiphyllum* Müll. Arg. Pyr. Cub. (1885), 418, Lich. Beitr. (Fl. 1885), n. 923, et *Lasiosphæria annulata* Karst. (Hedwigia, 1889, 193), habitu *T. minori* Wain. consimilia, pertinent. Ad cortices, folia et thallos varios lichenum crescunt.

LICHENES IMPERFECTI.

1. CORA.

1. C. PAVONIA (Web.) Fr.; Wain. Étud. Brés. ii. 240. Ad truncos arborum in pede montis Morne Couronne in Dominica (n. 219) et in monte St. Andrews (1000 ped. s. m.) in St. Vincent

(n. 14). Hæc specimina, decembri et julio lecta, basidiosporis omnino carent, at stratum corticale inferius ("hymenium") in speciminibus dominicanis (n. 219) sporis alienis fuscescentibus ellipticis inspersum est. Etiam Johow "basidiosporas" fuscescentes globosas verruculosas (diam. 0·012 millim.) in *Cora* invenit, at Möller nunc in Blumenau Brasiliæ eas (in speciminibus præcipue mense augusto lectis) abundantissime observavit (conf. Fl. 1893, 254) et adhuc omnino dissimiles vidit. Observante Möller "basidiosporæ." Coræ sunt albæ, ovales, long. 0·006–0·007, crass. 0·004 millim. Quum tales sint, quid tunc erant "basidiosporæ," quas Johow vidit? Ceterum Möller certissime errat, credens *Coram* et *Dictyonema* statum diversum esse ejusdem speciei, dicit *Thelephoreæ* veræ, gonidiis destitutæ, item ab eo lectæ. Ita res se habere non posse, jam a priori intelligitur. Certissime *Cora pavonia* et *C. reticulifera* species omnino constantes sunt, ut ex speciminibus abundantissimis in Brasilia et in herbariis variis observavi, et jam in statu juvenili a *Dictyonemate* differunt. Ceterum sicut species gonidiorum in omnibus speciebus lichenum constantes sunt, etiam præsentia et defectus gonidiorum lichenibus fungisque omnino est constans. Specimina species plures immixtas aut male evolutas continentia facile transitum simulatum specierum optimarum præbent, ut historia lichenologiæ exemplis numerosis demonstrat, quare observationes de transitu plantarum dissimilium caute approbandæ sunt.

2. Dictyonema.

1. D. sericeum (Sw.) Hariot, Bull. Soc. Myc. de France, vii. (1891), 32, 41 (Bot. Centralbl. 1892, Beibl. 19).

Var. æruginosa (Nees) Wain. *Dichonema æruginosum* Nees, Nat. Cur. Leop. xiii. (1826), tab. ii. (pag. 12). *Dictyonema sericeum* Johow, Hymenolich. (1884), 380, tab. vii. fig. 4. *D. sericeum* f. *sericea* Hariot, *l. c.* 41 (12). Ad truncos arborum in Laudat (1700 ped. s. m.) in Dominica (n. 890), mense novembr., et in Souffrière (3000 ped. s. m.) in St. Vincent (n. 229), mense januar. Conidiis ("basidiosporis") destituta.

Var. laxa (Müll. Arg.) Hariot, *l. c.* *Dictyonema laxum* Müll. Arg. Exp. Gazell. (1883), 57. *Laudatea cæspitosa* Johow, Hymenolich. (1884), 386, tab. xvii. fig. 5. Basin versus ad truncos arborum in Morne Anglais (n. 498) et Layon Park (n. 224) in Dominica. Etiam ad Carassam in Brasilia a me lecta.

Lepraria, habitu similis *L. chlorinæ* Ach., at hyphis multo tenuioribus ab ea differens, supra rupem ad Boery River in Dominica (n. 153 pr. p.). Thallus farinosus, citrinus, hyphis 0·001 millim. (rarius 0·002 millim.) crassis, leptodermaticis, materia lutea incrustatis, gonidiis protococcoideis, globosis (materiam luteam continentibus). Sub microscopio parum differt a thallo *Calycii corynelli* Ach., at, apotheciis destituta, omnino incertum est, anne ad id pertineat. *Lepraria chlorina* Ach. secundum specimen orig. in herb. Ach. hyphis 0·004–0·003 millim. crassis, sat pachydermaticis, anastomosantibus, gonidiis protococcoideis (majusculis) instructa est.

NOTES ON THE INDEX KEWENSIS.

By Dr. Otto Kuntze.

Having inserted the ± 5000 "addenda et emendanda" from page 1257–1299 into the body of the Kew Index with its ± 375,000 names and references, I may say that 1⅓ per cent. corrections is so low a rate that we ought to admire the Kew Index if there were no more. Indeed the bibliographical work of Mr. Jackson cannot be sufficiently appreciated. But through Sir Joseph Hooker's partly wrong direction of the Kew Index there are, from out of the about 120,000 names accepted as valid at least 20,000 false, and there are other great defects in the Kew Index.

I would not like to return to criticisms already printed in this Journal, although the omission of the first publication-dates to the species and the omission of the synonyms at the right place, namely under the valid species-names, is felt deeply; Steudel's *Nomenclator* with its synonyms in the right place must still be used for searching synonyms, and this work has not been replaced by the Kew Index as it was the wish of Darwin that it should be.

I want to mention some points not yet criticised, that I noticed when inserting the 5000 corrections.

All varieties are omitted and that is very wrong, because many varieties are considered by other authors as species.

All hybrids are not named by their proper names: (the combination of parent-names) but only by synonyms in italics.

All names of subgenera are omitted, although in case of need they are valid substitutes for invalid genera-names, as has been done sometimes in Bentham & Hooker's Genera Plantarum.

All Cryptogams are missing. I am not sure if it was the original plan of Darwin, who wished a renewed Steudel's *Nomenclator*, to exclude the Cryptogams as Sir Joseph Hooker did, who is only responsible for the direction of the work. But there exists indeed, at least to the first edition of Steudel's *Nomenclator* a second part for Cryptogams published 1824.

The authors of the Linnean period are poorly or not at all extracted as to genera-names, e. g. Miller's *Gardeners' Dictionaries*, Haller's *Enumeratio Stirpium Helvetiae* etc, etc. Only Boehmer's edition of Ludwig's *Definitiones generum plantarum* of 1760 has been taken more in consideration in the "addenda," whereas the first and second edition of 1737 and 1747 has been used only sometimes. Even Linnaeus' opus princeps, the *Systema plantarum* of 1735, was formerly extracted for the Kew Index in a quite insufficient manner and there are given many "addenda" found in my *Revisio generum plantarum*. As my Rev. gen. pl. was published after 1885, Mr. Jackson was perhaps not obliged to extract from it the names overlooked by him, but I have found among the "addenda" the following ones for the first 3 parts of the Kew Index; they are taken out of my Rev. gen. pl., as there are several genera-names with corrected determinations made at first in my book, e. g. *Acosta* Lour., *Michelia* L. 1735 non 1737, *Sutera* 1807 non 1821 etc. (The list is not complete, as I had not at first intended to make up such a list, and in the last part of the Kew Index some additions out of my book were already incorporated.)

Acinodendrum L. 1737 = Miconia R. & P. 1794.

Acuan Med. 1786 = Desmanthus W. 1805.

Anidrum Necker 1790 = Bifora Hfm. 1816.

Anil Ludw. May–June 1737 (genus clarum) = Indigofera L. Oct. 1738 genus dubium.

Bulga L. 1735 "Bugula Tourn." = Ajuga L 1737.

Calceolaria Loefl. 1758 (non Juss. 1759) = Ionidium Vent. 1803.

Colocynthis L. 1735 = Citrullus Forsk. 1775.

Diapedium Koenig 1806 = Dicliptera Juss. 1807. (I gave the original reference, Jackson formerly only Steudel's.)

Feuillaea L. 1735 (non 1737) = Inga Scop. 1777.

Fistularia L. 1735 = Rhinanthus auct. non L. 1735.

Japarandiba Ad. 1763 = Gustavia L. f. 1775.

Ichthyomethia P. Br. 1756 = Piscidia L. 1759.

Katoutsjeroe Ad. 1763 = Holigarna Roxb. 1819 (nomen corr. in Catutsjeron like Karbeni in Carbenia).

Lithocardium L. 1735 = Cordia L. 1737.

Michelia L. 1735 non 1737 = Barringtonia Forst. 1776.

Pavia L. 1735 = Esculus 1737 = Aesculus 1753.

Phaseolodes Mill. 1737 = Wistaria Nutt. 1818.

Physalodes Boehm. 1760 = Nicandra Ad. 1763.

Slackia Griff. No. 1, 1848 = Decaisnea Hk. f. & Th. 1854 (not Lindl. as Jackson writes erroneously).

Spiesia Necker 1790 = Oxytropis DC. 1802 (formerly under Astragalus, now put to Oxytropis, as I also corrected it).

Sutera Roth 1807 (non 1821) = Chaenostoma Bth. 1835. (Sutera Roth 1821 (non 1807) is now Jamesbrittenia OK.).

Tragacantha L. 1735 = Astragalus L. 1737. (Glycia L. 1735 belonging hereto, is omitted.)

In the Kew Index only Hookerian names being allowed (that is to say the nomenclature of Bentham & Hooker Genera Plantarum) although this restriction to Hookerian names was not indicated in the first programmes* and denied by Mr. Jackson in giving year-dates to the genera-names; all added names of the above given list are not adopted in the Kew Index notwithstanding they have the priority.

Also the next names added or corrected at the end of the Kew Index were to be found in my Rev. gen. pl., but their priority has been darkened in the Kew-Index by not giving the oldest reference:

Anemonospermos Moehr. 1736, Siegesb. 1736 = Arctotis L. 1737. (The Kew Index gives only Anemonospermos Boehm. 1760.)

Camphorata Ludw. 1737, Mill. 1739, Hall. 1742 = Camphorosma L. 1747. (Mr. Jackson gives only Camphorata Boehm. 1760, although he brings other extracted names out of Ludwig's Def. gen. pl., e. g. Rubeola, Cruciata).

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* See Journal of Bot. 1887, p. 66: "Only the circumscription of the genera and all questions thereon" of that work was indicated and (p. 67) strict priority was promised!

Cannabina Ludw. 1737, Mill. 1739 = Datisca L. 1747. (The Kew-Index gives only Cannabina ex L. 1749.)

Guiabara Mill. 1739 = Coccoloba L. 1759. (The Kew-Index gives only Guiabara Boehm. 1760 and omits also the oldest name: *Uvifera* L. 1738.)

Orleania Boehm-Ludw. 1760 = Bixa L. Oct. 1737. (The Kew-Index omits the *Orellana* Ludw. May–June 1737.)

Sesamodes Ludw. 1737 = Astrocarpus Necker 1790. (The Kew-Index gives only Sesamo(i)des Rchb. 1828.)

Can Mr. Jackson be indebted for these disorderly additions to the Kew staff, wherefrom no one is named and responsible? The Kew Index brings many "addenda" from Boehmer-Ludwig's Def. gen. pl. 1760 but *Achyrodes* Boehm. 1760 = Lamarckia Moench. 1794 has been overseen, although Achyrodes had been taken up by other botanists; see f. i. this Journal 1894: 185.

Many thousands of species-names exist only in synonyms and are not named correctly or according to Hookerian genera-names, and are missing at all under the valid genus-name. I shall give only very few samples out of the "addenda":

Diplopyramis aethiopica Welw. (= *Ceratogonon atriplicifolium*) = *Oxygonum* (1822) without species name. The same under *Ceratogonon* with 3 species, under *Polygonum atriplicifolium* Wall. 1828 and *P. Owenii* Bojer 1835, also under *Oxygonum* is missed the doubtless correct and valid name, *O. atriplicifolium*. Altogether in seven places the one correct name is omitted, through Mr. Jackson's unwillingness to form that correct name! Perhaps he had not permission to do it? Why did Sir Joseph Hooker not correct the thousand names of this kind? Why had Mr. Jackson not in this line the aid of the Kew Staff as announced in the preface? Had Mr. Jackson ever had any *ordinate* aid of the Kew Staff? Not so far as I know.* Why is the work called Index Kewensis if it does not bring the names of Kew herbarium as they ought to be according to the best Kew work: Bentham & Hooker's *Genera Plantarum*. The title: *Index Kewensis* in the meaning of bringing a full and exact list of phanerogamic names as they ought to be in Kew is inaccurate. "Du sollst dem Ochsen, der da drischet, nicht das Maul verbinden," says a proverb, but they did not use at Kew that good principle; I do not believe that they envied the task of naming the thousands of species transferendae. The "harmless drudge" and compiler, as Mr. Jackson calls himself (and Steudel, in this Journal 1892, p. 61) in reply to my dedications *Steudelago* and *Jacksonago*, has not had proper thanks for his immense labour and will now be quoted often merely for his errors, e.g. for the punning name *Helianthus decapitatus* Jackson = *H. decapetalus* L., *Quiritia* Jackson = *Glycyrrhiza* etc. Few samples more of species not named under the Kew genus-name: Nasella (15) = *Oryzopsis;* Gynopachis (6) = *Randia;* Colladonia (5) = *Prangos;* Bulbostylis (5) = *Fimbristylis;* Melantheopsis (4) = *Breynia* (but B. fruticosa Muell. arg. and B. patens Rolfe are missing); Leucothoe (2) = *Agauria;* Amphistelma (13) = *Vincetoxicum;* Eutoca (9) = *Phacelia;* Dufourea (5) = *Breweria;* Haemodictyon (26) = *Prestonia; Dimorphostachys* (9) = Panicum (but *D. monostachya* = P. monostachyum HBK.) etc.

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* Mr. Jackson was never an officer of the Kew herbarium, but the "Kew list," "Kew Index" being elaborated by him misled other botanists to believe him to be such; e.g. thus Professor Buchenau (see Engler's Bot. Jahrb. xv: 256, note) who sent therefore his monograph of Tropaeolum requested by me for Mr. Jackson only to the Kew herbarium in March 1892 (as he wrote me) instead directly to Mr. Jackson. And this monograph has also been used by Mr. Jackson by correcting and omitting the wrong names, e.g. *Tr. aureum* = Tr. azureum; Tropaeolum denticulatum Kew list = *Epilobium denticulatum* R. & P. as shown by Prof. Buchenau. The reproach against me in this Journal, 1894, 279, is therefore not substantiated; I fulfilled my part of contract.

Also two valid homonymous species-names occur often in the Kew Index, one of which had to receive a new name, but did not get it, e.g. out of the "addenda": 2 *Astragalus Candolleanus* (for the second exists already another species-name: *supervisa* under Tragacantha), 2 *Aster imbricatus* (1 = *worcesterensis* OK.), 2 *Derris oblonga*, 2 *Eugenia polyantha*, 2 *Festuca gracillima* & *scabrella*, 2 *Gocchatia glutinosa*, 2 *Cocculus diversifolius*, 2 *Cleome micrantha*, 2 *Justicia elegans*, 2 *Ipomoea decora*, 3 *Habenaria gracilis* etc.

Sometimes the aid of the Kew Staff was to be observed in the "addenda," f. i. *Ipomoea lilacina* Hemsl. and *oblonga* Hemsl. Biol. Centr. Am. Bot. ii. 391; but if we look at the referred place, we find only Ipomoea lilacina Schlecht. and I. oblonga Bth., and no description or indication that could permit to quote Hemsley or his error. Also many grass-names and new identifications probably out of the last *not yet* (till my manuscript went into the press) *published* part of Hooker's Flora of British India are inserted in the "addenda," but my Rev. gen. pl. published 1891 was put aside.

Ehrhart's 100 nomina usualia 1789 Beitr. iv: 145–150 are names of species and not names of genera, but in the Kew Index they are treated as genera names. If Mr. Jackson had calmly read my Rev. gen. pl. pag. xxv he would not have given in the "addenda" these names of Ehrhart among genera-names; e. g. there exist for 13 species of Carex such names and they are no synonyms of the genus Carex as indicated in the Kew Index. They are strongly to be excluded as well as Dochnall's grapes names in the same generic fashion. It is very irritating to find in the "addenda" of the Kew Index e. g. *Callithronium, Lonchophyllum* and *Xiphophyllum* Ehrh. 1789 = *Cephalanthera* Rich. 1818; *Cardiophyllum* Ehrh. 1789 = *Listera* R. Br. 1813; *Mariscus* Ehrh. 1789 = *Mariscus* Gaertn. (twice wrong because Ehrhart's species is *Mariscus* Haller 1742 = *Cladium* P. Br. 1756, whereas *Mariscus* Gaertn. is a mere section of *Cyperus* according to most authors); *Trichophyllum* Ehrh. 1789 = *Eleocharis* P. Br. 1810; *Diplorrhiza, Triplorrhiza* etc. Ehrh. 1789 = *Habenaria* W. 1805; *Monanthium* Ehrh. 1789 = *Rynchospora* Vahl 1806. No one of these nomina usualia of Ehrhart can claim priority.

In the "addenda" of the Kew Index are also inserted all names given in 1790 by Noronha, which however are according to my former information only nomina nuda, and are only valid from the date of identification by another author, e. g. *Pulcheria* Noronha 1790 n. n. cannot replace *Kadsura* Juss. 1810 "Kaempfer." I do not know whence Mr. Jackson took the identifications of these names of Noronha, and shall write till better information: *Pulcheria* Jackson 1895 "Norh. n. n." = *Kadsura* Juss. 1810 "Kaempf."

I may give other *Addenda et Emendanda* to the Kew Index in 3 lists.

1. 115 GENERA-NAMES OMITTED, ALTHOUGH TO BE VALID BY PRIORITY.

Aalius Rumph.[*] 1743, Lam. 1783 Encycl. I: 1 = Sauropus Bl. 1825.

Abutilodes Sieg. 1736 = Modiola Moench 1794.

Acetosella Moehr. 1736 = Oxalis L. 1737.

Achyrodes Boehm. 1760 = Lamarckia Moench 1794.

Acidoton P. Br. 1756 = Securinega Juss. 1789.

Agastache Gron. 1762 = Lophanthus Ad. 1763, Benth. 1829.[†]

Alga Ludw. 1737, Boehm. 1760 (non al.) = Posidonia Koenig 1806.

Anonymos Gron. 1739 = Galax L. 1753.

Arodes Fabr. "Heist." 1763 = Richardia Kth. 1818 non L.

Aspalathus Amm. 1739 (non L. 1753) = Caragana Lam. 1783.

Asphodeliris Moehr. 1736 = Tofieldia Huds. 1778.

Astericodes Moehr. 1736 = Callistephus Cass. 1825.

Asteriscus Sieg. 1736, Mill. 1737 p. p. max. (non al.) = Odontospermum Neck. 1790.

Badianifera L. 1749 = Illicium L. 1759.

Banisterodes L. 1747[*] = Xanthophyllum Roxb. 1814.

Beluttakaka Ad. 1763 = Chonemorpha Don 1836/7.

Boraginella Sieg. 1736 = Trichodesma R. Br. 1810.

Bulbocodium Ludw. Mai–June 1737 (non Lin. Oct. 1737) = Romulea Maratti 1772.

Cacalia Burm.[‡] 1737 (non al.) = Vernonia Schreb. 1791.

Caesalpiniodes L. 1738 = Gleditschia L. 1742.

Caopia Ad. 1763 = Vismia Vand. 1788.

Carthamodes Manetti 1751 = Carduncellus Ad. 1763.

Celsia Boehm. 1760 (non al.) = Bulbocodium Lin. Oct. 1737 non Ludw. May–June 1737.

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[*] I have omitted here all other names of Rumphius to be taken up by priority (see my Rev. gen. pl. i. p. xxxii) because the Kew Index gives these names only if renewed by other authors. But the Kew Index inconsistently gives first quotations to *Lansium* Rumph. 1741, *Timonius* Rumph. 1743, *Zalacca* Rumph. 1747, and omits all names taken up by Burman 1769 in his Index alter emendatus to Rumphii herbarium amboinense.

[†] The Kew Index indicates *Lophanthus* Ad. who based on Hyssopus Lophanthus L. as different from *Lophanthus* Bth. by error: see for items and more quotations of the names of the above given list my Rev. gen. pl.

[‡] The Kew Index omits *Nomina seminuda* given by Linnaeus and by Burman, but only inconsistently; see e. g. *Eugeniodes* L., *Cornutiodes* L., *Ribesiodes* L. etc. and *Leucas* Burm. 1737, *Moringa* Burm. 1737, *Osterdykia* Burm. 1738. These *Nomina seminuda* have the same or more right to become valid as those numerous names preferred in the Kew Index taken up out of Wallich's Numerical list, Roxburgh's Hortus bengalensis and R. Brown's list in Salt's Abyssinia, app.

Centaurodes Moehr. 1736 = Erythraea (Erithrea) Neck. 1790.

Ceratocephalus Burm. 1737 = Spilanthes Jacq. 1760.

Ceratodes Kramer 1744 = Ceratocarpus L. 1747.

Cerinthodes Ludw. 1737 = Mertensia Roth 1797.

Chamaedaphne Catesby 1740/3 (non al.) = Kalmia L. 1751.

Chamaedryfolia Dill. 1738 = Forskohlia L. 1764.

Chamaejasme Amm. 1739 = Stellera L. 1747 p. p.

Chamaeriphes Dill. 1738 = Hyphaene Gaertn. 1788.

Chianthemum Sieg. 1736 = Galanthus L. 1737 (1735 n. n.).

Christophoriana Burm. 1738 = Knowltonia Salisb. 1796.

Cicutaria Mill. 1737, Segu. 1745 & Cicutastrum Fabr. 1763 = Molopospermum Koch 1824.

Coluteastrum Moehr. 1736, Fabr. 1763 = Lessertia DC. 1802.

Corrigiola Moehr. 1736 (non L. 1737) = Illecebrum L. 1737.

Cucullaria Kramer 1744 = Callipeltis Stev. 1829.

Cunila L. 1759 (non 1737 quae Sideritis L. 1737) = *Hedyosmos* Mitch. 1748.*

Cynoglossospermum Sieg. 1736 = Echinospermum Lehm. 1818 "Sw."

Dactylodes Zan.-Montius 1742 = Tripsacum L. 1759.

Dendrorchis Thouars 1809 = Polystachya Hk. 1825.

Dentillaria Burm. 1737 = Knoxia L. 1747.

Ebenus Burm. 1737 (non L. 1753) = Maba Forst. 1776.

Elaterium Ludw. 1737, Mill. 1737 (non Jacq. 1763) = Ecballion Rich. 1825 non L.

Emerus Burm. 1737 = Sesbania Ad. 1763.

Epidorchis Thouars 1809 = Mystacidium Ldl. 1836 em.

Erica Sieg. 1736, L. 1737 (1735 n. n.) = Calluna Salisb. 1802.

Ericodes Moehr. 1736 "Heist." = Tetralix Hall. 1742 = Erica L. 1753.

Erigerodes L. 1747 = Epaltes Cass. 1818.

Gaedawakka L. 1747 = Chaetocarpus Thw. 1854.

Gemmingia Fabr. 1759 "Heist." = Belamcanda Ad. 1763.

Geraniospermum Sieg. 1736 = Pelargonium Burm. 1738.

Graphorchis Thouars 1809 = Eulophus R. Br. 1821 (-ia 1823).

Guilandinodes L. 1738 = Schotia Jacq. 1786.

Heleniastrum Mill. 1739, Hall. 1745 = Helenium L. 1753, non 1735.

Hieraciodes Moehr. 1736, Sieg. 1736 = Crepis L. 1737.

Hierapicra Sieg. 1736 = Carbenia Ad. 1763.

Hydrugonum Sieg. 1736 = Cassandra Don 1838.

Jacobaea Burm. 1737 = Vicoa Cass. 1829.

Jacobaeastrum Manetti 1751 = Euryops Cass. 1818.

Japarandiba Ad. 1763 = Gustavia L. f. 1775.

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* Although I showed that *Cunila* L. 1737 and 1759 are 2 different genera, that of 1737 reduced by Linnaeus himself to *Sideritis* and that of 1759 only based on *Hedyosmos* Mitch. by changing merely that name, the Kew Index did not take notice of it; moreover the Kew Index brings another puzzle copied out of Pfeiffer's Nomenclator that *Hedyosmos* Mitch. be the Rubiacea *Ziziphora!!* See my Rev. gen. pl. 519–520. A crowd of such puzzles could have been eliminated from the Kew Index, if the Kew staff and Mr. Jackson had properly used my Rev. gen. pl.

Jasminonerium L. 1747 = Carissa L. 1767.

Jurighas L. 1747 = Filicium Thw. 1864.

Kaluhaburunghos L. 1747 = Cleistanthus Hk. f. 1848.

Kauken(ia) Burm. 1737 = Mimusops L. 1747.

Leptorchis Thouars 1809 = Liparis Rich. 1818.

Leucanthemum Burm. 1738 = Osmitopsis Cass. 1817.

Leuconymphaea Ludw. 1737 = Castalia Salisb. 1805 = Nymphaea auct. (L. p. p. min.).

Limoniodes Sieg. 1738 = Limoniastrum Fabr. 1759, Moench 1794.

Linosyris Moehr. 1736 = Thesium L. 1737.

Lotodes Sieg. 1736 = Psoralea L. 1742.

Lupulus Mill. 1737 (non 1768) = Gouania Jacq. 1763.

Lyciodes L. 1738 = Bumelia Sw. 1788.

Majanthemum Sieg. 1736 (non Wigg.) = Convallaria auct. non L.

Malapoenna Ad. 1763 = Litsaea Lam. 1789.

Mariscus Haller 1742 (non Gaertn. 1788) = Pseudocyperus Seguier 1745 = Cladium P. Br. 1756.

Murex L. 1747 = Pedalium L. 1759.

Murtughas L. 1747 = Lagerstroemia L. 1759.

Myrtoleucodendron Burm. 1742 = Melaleuca L. 1767.

Nelanaregam Ad. 1763 = Naregamia Wight & Arn. 1834.

Nummularia Gron. 1739 = Steironema Raf. 1820.

Nymphaea Ludw. 1737 (non L. genus confusum) = Nuphar Sm. 1809.

Obolaria Sieg. 1736 = Linnaea L. "Gron." 1737.

Ocymastrum Seguier 1745 = Centranthus (Kentranthus) Neck. 1790.

Onoseris W. 1804 (non DC. 1812) = Lycoseris Cass. 1824.

Orchiodes Trew 1736, Sieg. 1737 = Goodyera R. Br. 1813.

Oxydectes L. 1735 = Croton L. 1737.

Palmifolium Trew 1752 n. c. = Palmafilix Ad. 1762/3 = Zamia Lin. July, 1763.

Panicularia Fabr. 1763 (Heist.* 1748 n. n.) = Glyceria R. Br. 1810.

Perfoliata Burm. 1738 = Hermas L. 1771.

Phyllorchis Thouars 1809 = Bulbophyllum Thouars 1822.

Pongati Ad. 1756, 1759 = Sphenoclea Gaertn. 1789.

Pterospermadendron Amm. 1741 = Pterospermum Schreb. 1791.

Pusaetha L. 1747 = Entada Ad. 1763.

Rhamnicastrum L. 1747 = Scolopia Schreb. 1789.

Ricinocarpus Burm. 1737 = Acalypha L. 1753 & auct. non 1737 quae Tragia.

Santalodes L. 1747 = Rourea Aubl. 1775.

Scolymocephalus Weinm. 1745 = Protea R. Br. 1810 non L. 1737, 1740.

Seguiera Manetti 1751 = Chlora Ad. 1763.

Sertula L. 1735 (non = Trifolium) = Melilotus Haller 1742.

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* The Kew Index gives this name but only with the remark "Quid?" omitting the quotation and identification of Fabricius; it gives also the name: *Stellaster* Heister 1748 with "Quid?" but being = Stellaris Dill. it becomes valid for Gagea Salisb. 1806 as I showed in Rev. gen. pl.

Siphoneranthemum § Oerst. 1831 = Pseuderanthemum Radlk. 1883 ! = Eranthemum BHgp. non L. 1747.

Stoechadomentha L. 1747 = Adenosma R. Br. 1810.

Tekel(*ia*) Ad. 1763, Scop. 1777 = Libertia Spr. 1825.

Thalictrodes Amm. 1739 = Cimifuga L. 1750.

Tinus Burm. 1737 = Ardisia Sw. 1797.

Tithymalodes Ludw. 1737, Mill. 1737 = Pedilanthus Neck. 1790.

Toddavaddi Zan.-Montius 1742 = Biophytum DC. 1824.

Tragopogonodes Manetti 1751 = Urospermum Scop. 1777.

Tulbaghia Heister 1753 (non L. 1771) = Agapanthus L'Hér. 1788.

Urticastrum Moehr. 1736, Heist. 1748, Fabr. 1759 = Laportea Gaud. 1826.

Uva Burm. 1737 = Uvaria L. 1747.

Uvifera L. 1738 = Coccoloba L. 1759.

Vesicaria Ludw. 1737 = Coluteocarpus Boiss. 1842.

Yerbamora Ludw. May–June 1737 = Bosea Lin. Oct. 1737.

Zatarhendi Forsk. 1775 p. cxv & 110 = *Majana* Rumph. 1747 = Coleus Lour. 1790.

2. 11 GENERA-NAMES INDICATED IN ALPHABET ORDER BUT OMITTED UNDER A NAME TO BE POSTPONED BY PRIORITY.

Acinodendrum L. 1737 (see Kew Index Addenda) = Miconia R. & P. 1794.

Adodendrum Neck. 1790 = Rhodothamnus Rchb. 1827.

Alicastrum P. Br. 1756 = Brosimum Sw. 1788.

Alguelaguen Ad. 1763 = Sphacele Bth. 1829.

Arduina Ad. 1763 = Kundmannia Scop. 1777.

Camara L. 1735 = Lantana L. 1737.

Karangolam Ad. 1763 = Marlea Roxb. 1819.

Ouret Ad. 1763 = Aerva Forsk. 1775.

Rulac Ad. 1763 = Negundo Moench. 1794 resp. Acer.

Tubiflora Gm. 1791 = Elytraria Michx. 1803.

Xeraea L. 1735 = Gomphrena L. 1737.

See also in the next list: Alismorchis, Coilotepalus.

3. 25 BEHIND-DATES OF THE KEW INDEX OBSCURING THE PRIORITY OF GENERA-NAMES TO BE VALID.

Adicea Raf. 1815 (not only 1824 !) = Pilea Lindl. 1821.

Alismorchis Thouars 1809 (not only 1822 ! and omitted under Calanthe !) = Calanthe R. Br. 1821.

Ambaiba Barrère 1741 (not only Ad. 1763 !) = Coilotepalus P. Br. 1756 (omitted under Cecropia !) = Cecropia Loefl. 1758.

Angorchis Thouars 1809 (not only Nees 1826 !) = Angraecum Lindl. 1826 non Bory = Rumpf quod genus confusum.

Benzoin Ludw. 1737, Fabr. 1763 (not only Nees 1831 !) = Benzoinifera Sieg. 1740 (also missing) = Lindera Thbg. 1783.

Bermudiana L. 1735 (correct in alphabet order but obscured under Sisyrinchium with the only date Ad. 1763 !) = Sisyrinchium L. 1737.

Carelia Moehr. 1736 (not only Ad. 1763 !) = Ageratum L. 1737.

Chamacistus Oeder 1761 (not only S. F. Gray 1821!) = Loiseleuria Desv. 1813.

Conyzodes Moehr. 1736 (not only DC. 1837!) = Carpesium L. 1741/6.

Corallodendron L. 1735 (not only Hall. 1745!) = Erythrina L. 1737.

Corymborchis Thouars 1809 (not only Bl. 1855!) = Corymbis Lindl. 1847 "Thouars 1822."

Draco Heister 1748, Ad. 1756 (not only Crantz 1768!) = Dracaena "Vand. 1762."

Guajava Moehr. 1736 (not only Ad. 1763!) = Psidium L. 1737.

Ionthlaspi Sieg. 1736 (not only Ad. 1763!) = Clypeola L. 1737.

Iria Pers. "Rich." 1805 (not only Hedw. 1806!) = Fimbristylis Vahl. 1806.

Iridorchis Thouars 1809 (not only Bl. 1858!) = Oberonia Ldl. 1830.

Liliastrum Ludw. 1737 (not only Link 1829!) = Paradisea Mazz. 1811.

Meadia Catesby 1748 (not only Mill. 1752!) = Dodecatheon 1751.

Nymphodes Ludw. 1737 (not only Med. 1789!) = Limnanthemum Gm. 1769.

Pentagonia Moehr. 1736, Sieg. 1737 (not only Vent. ex Steud. 1841!) = Specularia Heist. 1748.

Pentagonocarpus Targ.-Tozz. 1748 (not only Parl. 1872!) = Kosteletzkia Presl. 1831.

Potamopithys L. 1735 (not only Ad. 1763!) = Elatine L. 1737.

Sagus Rumph. 1741, Ad. 1763 (not only Gaertn. 1788) = Metroxylon 1783.

Securidaca Sieg. 1736, Ludw. 1737, non L. 1742 (not only Mill. 1752!) = Securinega DC. 1805.

Urceolaria Mol. 1782 (not only 1810!) = Sarmienta R. & P. 1794.

The date 1737 of Linnaeus Hortus Cliffortianus is to be corrected always in 1738; see Rev. gen. pl. page cxxxiv and the date 1809 of R. Brown's Monograph of Asclepiadaceae in Mem. Wern. Soc. i. is also wrong; for that paper was not published before 1811 as indicated in R. Brown's Misc. Works (german edition). But *Hoya* and *Dischidia* R. Br. were already published 1810 in R. Brown's Prod. fl. Nov. Holl. and have a doubtful not yet settled priority towards *Sperlingia* and *Colyris* Vahl 1810. Velloso Flora fluminensis appeared 1835, not 1827.

The Director of the Royal Gardens, Kew, Mr. Thiselton Dyer, has given 1895 a presidential address to the Botanical Section of the British Association,* also with remarks on nomenclature, saying scarcely anything new thereabout, if not the following remark: "But it is a mistake to suppose that . . . . it (the Kew Index) expresses any opinion of the validity of the names themselves." That must not be forgotten, for in regard to the honest and scientific principle of priority the finishing of the Kew Index has been unfair. Even Mr. Jackson found often older names to be renewed, if he were allowed to do so according to his early promise; so he wrote only thereto: *nomen prius!* But Mr. Dyer is innocent of that unfair finishing, for, so far as I know, he scarcely gave any line to the Kew Index; although a good director of Kew Gardens, he is neither an experienced specialist in nomenclature nor a working systematist, as I showed already in Rev. gen. pl. ccci/iii. The quoted speech of Mr. Dyer in 1895 finished such:—"All that can be hoped is a general agreement amongst the staffs of the principal institutions in different countries where systematic botany is worked at; the *free-lances* must be left to do as they like." Mr. Stapf translated free-lances into German with *Wilde*. Till now the Kew botanists always refused to work in agreement of nomenclature with any other botanical institution or Congress! Now Mr. Dyer insults the 80–90 % of botanists, who do not agree with the Kew-nomenclature as *free-lances* or *Wilde*. Does Mr. Dyer not know that science was often more promoted by "free-scientists" than by business-botanists in high position? Even if Mr. Dyer would be willing and able to obtain such an agreement, it would not be possible to base it on the Kew Index, of which the validity of names has been justly doubted by himself. Moreover the most prominent botanic institutions have such different and arbitrary nomenclatures that no agreement between them is possible, inasmore as some directors of such institutions do not like to correct the wrong nomenclature of their works. They could only be corrected by the majority of other botanists and surely that will be done in future. The confusion in nomenclature is now too large everywhere and locally; in Berlin, e. g. different names for the same genus are sometimes used by several officers of the botanic Museum and others published in the same time two different names to the same new plants: the arbitrary and the international name! Only an international competent Congress with the necessary preparation can bring order into botanic nomenclature by a way shown in my paper: "Les besoins de la nomenclature botanique."

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* Reprinted in "Erythea" 1896: 5–15, and in german translation but only partly by Mr. Stapf in "Bot. Centralblatt" 1896: 44–50. [See also Journ. Bot. 1896, 114.]

BIBLIOGRAPHICAL NOTES.

XII.—The Dates of Rees's Cyclopædia.

[The following paper, issued privately at the end of last year by Mr. B. D. Jackson, is here reprinted with his permission. The information in square brackets is additional to the original publication, and is taken from Mr. B. B. Woodward's notes in the copy of the paper in the Natural History Museum.—Ed. Journ. Bot.]

It is nearly nineteen years since I first endeavoured to discover the actual dates on which the several parts of Rees's Cyclopædia were issued. In the *Journal of Botany*, April, 1877, 107, 108, I printed all I had then been able to ascertain.

The Cyclopædia was issued in parts, two of which formed a volume, at uncertain intervals; and on the completion of the work a set of title-pages was issued, bearing the date of the last, namely, 1819 for thirty-nine volumes of letterpress, and 1820 for five volumes of plates.

The botanical articles in Rees's Cyclopædia were contributed by Sir James Edward Smith, sparingly at first, but entirely from the end of letter C to the completion of the work. The Rev. William Wood, of Leeds, who had undertaken that portion, died suddenly whilst engaged upon the article Cyperus, and thenceforward the botany and botanical biographies are wholly Smith's, with the exception of a few by the Rev. W. F. Drake. The more elaborate articles are signed "S.," whilst the unsigned ones are those written "without particular study, though as well (I trust) as a common compiler would do them" (Smith, *in litt.*). In all, 3045 articles were sent, including in that number fifty-seven biographies; of these a fuller account will be found in Lady Smith's *Life and Correspondence of Sir J. E. Smith*, i. 488–490. It is frequently of great importance to know accurately the date of publication of the systematic botany, where many new species are described, but there is no clue in the book itself.

I first tried to get a sight of the parts in their original covers as issued, but in vain, for no answer came to my advertisement. I then tried to compile the dates from the foot of each plate, but was baffled from the fact that each series of plates was not issued in conjunction with its letterpress, but in many cases the publication extended over the whole period. The catalogues issued by the booksellers only supplied me with the information as to the cost of the whole, but no hint as to intermediate date. Next I wrote to the publishers, Messrs. Longmans, but their reply was to the effect that their books for the period were no longer extant. I next searched the *Gentleman's Magazine*, but the information was so meagre as to be wholly insufficient. As a last resource I examined the *Monthly Literary Advertiser*, and here I was able to get some positive information. This serial was published on the 10th of each month, or the 9th if the former date fell on Sunday. I have quoted the date named in this periodical, so that in some cases I may have attributed the date a month later than the actual fact. In my article in the *Journal of Botany* I was able to assign dates to twenty-three parts, chiefly of the later ones.

Three years later a few more items had come to light, which I incorporated in a tabular statement, printed and issued in 1880, but exhausted some years ago. As enquiries are still made of me regarding it, I now re-issue it, thoroughly revised, and in this form it represents all that I shall probably ever be able to ascertain regarding the work.

About four or five years ago I was informed that a set of the Cyclopædia was for sale in the original state, and I secured it for a very insignificant sum. Absorbed in other work, the volumes have lain till now unexplored, but I have within the last few days examined them, and the list which follows is the result.

My copy is in admirable condition—perfect, so far as I know, with the exception of one sheet—with grey paper-boards, cream-coloured backs, and pink labels. Each part is not dated outside, but inside the cover there is often a list of new books published by Longmans, generally dated—sometimes even with the day of the month. These close dates seem accurate and trustworthy; at least, the first one of all is confirmed by a later statement to the very day of issue. This source and information I have called "Book List," and I rank it only second to the definite dates given in the *Monthly Literary Advertiser*.

Both these authorities added together yet leave many gaps. I hoped that the dates on the plates would enable me to fill them up, but I have been grievously disappointed. Even in the earliest issues the dates varied, till, towards the middle of the work, they differed by many years, then only the year was given, and, in a few cases, no date whatever—only, "Published, as the Act directs, by Longman," &c.

I had hitherto believed that the dates were fairly trustworthy, but the cynical indifference to actual fact betrayed in issuing in one cover such widely various dates as 1805 and 1813 caused me to investigate the whole question of dating plates.

The custom arose in order to preserve the copyright in the engraving. In 1735 an Act was passed (8 George II., c. 13) specifying this, and stating that the designer ". . . . . shall have the sole right and liberty of printing and reprinting the same for a term of fourteen years, to commence from the day of the first publishing thereof, which shall be truly engraved with the name of the proprietor on each plate, and printed on every such print or prints." The penalty was to be five shillings on every print of the infringement, one half to the Crown, and the other to the informer suing.

In 1767 this was modified, the term of years being extended to twenty-eight, the occasion being to protect the engravings after Hogarth's pictures. An important decision of Chief Justice Best in 1816 shows that the law had not relaxed, although the practice, as shown in the Cyclopædia, had. The Copyright Act of 1842 gave the death-blow to these provisions, every map or engraving in a copyrighted book thenceforward sharing in the protection.

In the following tabular statement I have given the volume and its part; also the running numbers of the parts, as that is quoted frequently in the *Monthly Literary Advertiser*. Next follows the contents, or, in other words, the first article and the last in each part, then the nearest date assigned to it, authenticated by the source of information. The initials *M.L.A.* stand for *Monthly Literary Advertiser*, and are most to be trusted; next the book-lists—as already mentioned—and finally, a few entries have been given from among the dates of the plates in each part; when the dates varied, as they almost always did, I have taken the latest in date, but, as will be seen from what has gone before, these dates are worth very little, and in too many cases I found them absolutely useless.

In conclusion, I may say that I should be glad if some suitable resting-place could be found for this set, which seems unique, where it might remain as the voucher for the parts and the issue of the plates in its present form. Every other copy known to me has been sorted into sequence to the complete obliteration of the few and faint indications of publication, such as I have, with much labour for little result, set out in this pamphlet.

B. Daydon Jackson.

Vol.	Sect.	Part.	Contents.	Date.	Authority.
1	I.	1	A—Agoge	2 Jan. 1802	Book List.
	II.	2	Agogliastro—Amaranthoides	2 May, 1802	Last Plate.
2	I.	3	Amaranthus—Antimony ..	2 Sept. 1802	Do.
	II.	4	Antimony—Arteriotomy ..	2 May, 1803	Do.
3	I.	5	Artery—Babel-mandeb ..	— Aug. 1803	Do.
	II.	6	Babenhausen—Battersea ..	1 Feb. 1804	Do.
4	I.	7	Battery-point—Biörnstall ..	1 Aug. 1804	Do.
	II.	8	Biot—Bookbinding	1 Feb. 1805	[Last Plate.]
5	I.	9	Bookkeeping—Brunia ..	1 Sept. 1805	Last Plate.
	II.	10	Brunia—Calvart	[2 Sept. 1805	Do.]
6	I.	11	Calvary—Cape of Good Hope	17 Feb. 1806	Book List.
	II.	12	Cape of Good Hope—Castra	23 May, 1806	Do.
7	I.	13	Castramentation—Chalk ..	30 Sept. 1806	Do.
	II.	14	Chalk—Chronology	1 Jan. 1807	[Last Plate.]
8	I.	15	Chronometer—Clavaria ..	— Jan. 1807	[Do.]
	II.	16	Clavaria—Colisseum ..	1 Aug. 1807	Book List. [& Plate.]
9	I.	17	Collision—Congregation ..	— Dec. 1807	Do.
	II.	18	Congregation—Corne ..	1 Mar. 1808	Do.
10	I.	19	Cornea—Croisade	— May, 1808	*M.L.A.*
	II.	20	Croisade—Czyrcassy ..	27 June, 1808	Book List.
11	I.	21	D—Deluge	24 Sept. 1808	Do.
	II.	22	Deluge—Dissimilitude ..	28 Nov. 1808	Do.
12	I.	23	Dissimulation—Dynamics ..	— Mar. 1809	*M.L.A.*
	II.	24	Dynamics—Eloanx	— June, 1809	Do.
13	I.	25	Elocution—Equation ..	14 Aug. 1809	Book List.
	II.	26	Equation—Extremum ..	— Dec. 1809	*M.L.A.*
14	I.	27	Extrinsic—Fibro-cartilage ..	[2 Oct. 1809	Last Plate.]
	II.	28	Fibro-cartilage—Food ..	1 Feb. 1810	Last Plate.
15	I.	29	Food—Froberger	23 June, 1810	Book List.
	II.	30	Frobisher—Generation ..	8 Oct. 1810	Do.
16	I.	31	Generation—Gniewe ..	— Dec. 1810	*M.L.A.*
	II.	32	Gnoien—Gretna-Green ..	[25] Jan. 1811	[Book List.]
17	I.	33	Gretry—Hatfield-Regis ..	?	
	II.	34	Hatfield-Regis—Hibe ..	12 April, 1811	Book List.
18	I.	35	Hibiscus—Huysum	1 May, 1811	Last Plate.
	II.	36	Huzanka—Increment ..	1 Aug. 1811	Book List.
19	I.	37	Increment—Josephus ..	1 Sept. 1811	Last Plate.
	II.	38	Josephus—Kilmes	— Dec. 1811	Book List.
20	I.	39	Kiln—Lauremberg	?	
	II.	40	Lauremberg—Lights ..	— Mar. 1812	Book List.
21	I.	41	Light-house—Longitude ..	?	
	II.	42	Longitude—Machinery ..	?	
22	I.	43	Machinery—Manganese ..	[12 Mar. 1812	Book List.]
	II.	44	Manganese—Mattheson ..	— Oct. 1812	Book List.
23	I.	45	Matthew—Metals	— Dec. 1812	Do.
	II.	46	Metals—Monsoon	— April, 1813	*M.L.A.*
24	I.	47	Monster—Muscle	[— Mar. 1813	Book List.]
	II.	48	Muscle—Newton	[12 Feb. 1813	Last Plate.]
25	I.	49	Newtonian—Oleinæ ..	?	
	II.	50	Oleinæ—Ozunicze	?	
26	I.	51	P—Passiflora	[1 June, 1813	Last Plate.]
	II.	52	Passiflora—Perturbation ..	— Dec. 1813	Book List.

Vol.	Sect.	Part.	Contents.	Date.	Authority.
27	I.	53	Pertussis—Picus	— Mar. 1814	Book List.
	II.	54	Picus—Poetics	?	
28	I.	55	Poetry—Preaching	?	
	II.	56	Preaching—Punjoor	[1 May, 1814	Book List.]
29	I.	57	Punishment—Ram	?	
	II.	58	Ram—Repton	— Dec. 1814	Book List.
30	I.	59	Republic—Rock	?	
	II.	60	Rock—Rzemien	?	
31	I.	61	S—Sarabanda	——— 1815	Last Plate.
	II.	62	Sarabanda—Scotium	— Sept. 1815	Book List.
32	I.	63	Scotland—Shammy	— Mar. 1816	*M.L.A.*
	II.	64	Shammy—Sindy	[— Feb. 1816	Book List.]
33	I.	65	Sine—Sound	— May, 1816	Book List.
	II.	66	Sound—Starboard	— July, 1816	Do.
34	I.	67	Starch—Stuart	[— Oct. 1816	Book List.]
	II.	68	Stuart—Szydlow	[Do.	Do.]
35	I.	69	T—Testudo	— Feb. 1817	Do.
	II.	70	Testudo—Toleration	[— May, 1817	Advt. in Gent. Mag.]
36	I.	71	Tolerium—Tumours	— Aug. 1817	Book List.
	II.	72	Tumours—Vermelho	24 Oct. 1817	*M.L.A.*
37	I.	73	Vermes—Union	23 Dec. 1817	Do.
	II.	74	Union—Wateeoo	?	
38	I.	75	Water—Whitby	[— April, 1818	Book List.
	II.	76	Whitby—Wren	31 July, 1818	*M.L.A.*
39	I.	77	Wren—Zyto: Aam-Baldwin	[— Dec. 1818	Book List.]
	II.	78	Baldwin—Zollikofer. Titles	[— Sept. 1819	Publisher's Advt.]
["and last"]	III.	79	Titles, Preface, Plates	— Aug. 1820 ("last")	*M.L.A.*

Part	A	Plates to complete.	[Delivered with	21 I.	(Label on back).
,,	B	Do.	Do.	25 II.	
,,	C	Do.	Do.	29 I.	
,,	D	Do.	Do.	31 I.	
,,	E	Do.	Do.	39 I.	
,,	F	Do.	Do.	39 III.	]

REVISION OF EXTRA-TROPICAL SOUTH AFRICAN ASCLEPIADACEÆ.

By Rudolph Schlechter.

In this following paper I have endeavoured to comply with the wish of many of my South African correspondents by making an enumeration of the *Asclepiadaceæ* hitherto described from extra-tropical South Africa. I have not attempted to draw a natural boundary between the extra-tropical species and the tropical ones, since anyone who has seen a little of the South African flora will be convinced that it would have been a vain attempt; in the east as well as in the north no natural boundary exists. In Harvey & Sonder's *Flora Capensis* the limits of the north are very uncertain, as in those days very little was known about the interior districts. Judging from the knowledge which we have nowadays of these countries, I consider it advisable that in the volumes of the *Flora Capensis* which are now in course of preparation only the species south of the Tropic of Capricorn should be enumerated, while the

Flora of Tropical Africa should be confined to those growing north of this line: no attempt should be made to draw a boundary on the east coast as far south as Delagoa Bay, or even farther, as has been done in the three published volumes of the *Flora of Tropical Africa*.

Perhaps it may not be out of place to make a few remarks on the geographical distribution of the South African *Asclepiadaceæ*.

It is certainly interesting and well worth mentioning how very different the distribution of *Asclepiadaceæ* in this country is from that of the Orchids, although they have many points in common, and are adapted to the same mode of fertilization by insects. While the Orchids are fairly equally divided over a belt around the south and east coasts, and are vastly decreasing in number and proportion to the other orders towards the drier interior, the *Asclepiadaceæ* undoubtedly have their head-quarters in the east, and are most distinctly decreasing in number towards the south-west.

In the south-western region we find only three genera which may be regarded as truly typical to this region—*Microloma* R. Br., *Eustegia* R. Br., and *Glossostephanus* E. Mey. Omitting these three genera, all the *Asclepiadaceæ* in the south-western region seem to be outposts of more or less eastern or northern genera, which have migrated in, for most of them have a decided distribution to the east or north, at any rate they can hardly be regarded as belonging to the same type of flora which by botanists is generally called the true Cape flora, of which the extremely local distributions of many species is a marked feature, and seems to tell for the age of this flora.

The number of species of *Asclepiadaceæ* in the south-western region is, considering the richness of the whole flora, so small that it would be useless to attempt to ascertain the correct proportion. It may suffice to say that there are to be found hardly fifty different species; almost half this number being common with either the northern or south-eastern regions. The largest genus here represented is *Schizoglossum*, with thirteen species, of which only eight are endemic in our region, whereas other five have been recorded from the south-eastern region as well. The *Stapeliæ* mostly occur only where the flora of the Karroo has found its way through the river valleys or deep mountain passes into the south-western regions, or where no sharp boundary exists between these two regions, as is the case in the Clanwilliam district in the north-west. Other genera represented in the south-western region are *Astephanus* R. Br., *Asclepias* L., *Cynanchum* L., *Sarcostemma* R. Br., *Brachystelmaria* Schltr., and *Secamone* R. Br. These comprise seventeen species, of which only six are endemic.

The "Karroo" and the "Upper Region" are both very similar with regard to their Asclepiadaceous flora. Here the *Stapelieæ* rank by far the highest in number, for here are evidently the head-quarters of the large genus *Stapelia* and several of the smaller allied genera, such as *Huernia*, *Caralluma*, and *Duvalia*. A rather distinct flora we get towards the Namaqualand coast-belt, out of which may be mentioned several characteristic genera, viz. *Ectadium* E. Mey., *Ryssolobium* E. Mey., *Decabelone* Dcne., *Hoodia* Dcne., and *Trichocaulon* N. E. Br. Other genera represented are *Microloma* R. Br., *Asclepias* L., *Cynanchum* L., *Dæmia* R. Br., *Pentarrhinum* E. Mey., and several *Ceropeginiæ*, as *Orthanthera* Wight, *Decaceras* Harv. and *Dichælia* Harv. Not much is known as yet about the Kalahari region, very few plants having been brought from there. The coast-belt between the mouth of Orange River and Walfish Bay is almost unexplored, especially south of Angra Pequena, Prof. Schinz and Dr. Marloth in the western, and myself in the eastern Kalahari having collected no Asclepiads in this region within our boundary.

Before proceeding to the south-eastern region, I may be allowed to make a few remarks concerning the eastern limits of the Kalahari region. When Mr. Bolus wrote his valuable *Sketch of the Flora of South Africa*, nothing was known about these parts, and hence the author preferred to adopt Grisebach's boundaries. Since then, however, extensive collections were made in the Transvaal and the Orange Free State, through both of which countries I went myself, collecting extensively in the former, but little only in the latter, yet sufficient to give me an idea of the distribution of the main types. From my own observations and from those of others, I think that the Kalahari should be limited in the south-east by the southern boundary of the Orange Free State, and comprise only the south-western half of this country; from the neighbourhood of Potchefstroom the line should then go north to the head-waters of the Limpopo or Crocodile River, and from there north-east to the western extremity of the Zoutpansbergen. All the country lying to the east of this line should be included in the south-eastern region, with which it has much more affinity in its flora than with the Kalahari.

The south-eastern region as defined above is, as far as *Asclepiadaceæ* are concerned, probably the richest country in the world. Of the fifty-four South African genera of *Asclepiadaceæ*, we find forty in this region. Some of these extend north to the tropical Africa, others are typical to the region, such as *Chlorocyathus* Oliv., *Rhombonema* Schltr., *Fanninia* Harv., *Periglossum* Dcne., *Krebsia* Harv., *Lasiostelma* Bth., *Macropetalum* Burch., *Sisyranthus* E. Mey., *Riocreuxia* Dcne., and *Anisotoma* Fenzl. With the single exception of *Ectadium virgatum* E. Mey., all the species of the suborder *Periplocoideæ* have their home here.

As in the other features of the flora, there is a decided affinity to the tropical African species, especially to those in Angola. Little or no affinity we find to Madagascar in the presence of *Pentopætia natalensis* Schltr., a species being, however, so well distinguished from the Madagascarian ones that it may be regarded as a type of a well-marked subgenus, *Leptopætia*, a name already proposed by Harvey. The want of marked affinity to the high mountains of tropical Africa, especially the Kilimanjaro, the Kenia, the Ruwenzori, and the highlands of Abyssinia, is best explained by the circumstance that *Asclepiadaceæ* are not fond of the windy and cloudy mountain-heights. Even here in the south-eastern region, where they are so numerous, their number is but very small on the high mountains.

By far the largest genera in the south-eastern region are *Schizo-*

glossum E. Mey. and *Asclepias* L.; the former being a purely African genus with about one hundred species, of which seventy are South African, and these, with the exception of only eight species, all south-eastern. The genus *Asclepias* has representatives almost over the whole world, but its species nowhere reach such splendour as in the South African *Pachycarpi*, some of which, e.g. *A. grandiflora* L.f., *A. linearis* Schltr., *A. insignis* Schltr., *A. Schinziana* Schltr., and *A. vexillata* Schltr., well deserve to be introduced into European gardens.

In conclusion, I have to treat a few purely systematic points. I have united the two genera *Ectadiopsis* Bth. and *Cryptolepis* R. Br., there being no distinctive characters whatever to keep them separated. *C. obtusa* N. E. Br. is, for instance, very nearly allied to *C. transvaalensis* Schltr., which in floral characters cannot be generically separated from the type of Bentham's genus *Ectadiopsis*. I fear, too, that *Curroria* Planch. may have to go to *Cryptolepis*, as it is closely allied to *C. Monteiroæ* Oliv., through which species it is well connected with the typical Cryptolepids. However, the latter is a question which hardly concerns us at present, since *Curroria decidua* Planch., the only species of the genus, has not been found as yet within our boundary. As my views respecting *Hæmax* E. Mey. and *Gomphocarpus* R. Br. have been already published, it is needless to repeat them.

In the following list the genera are enumerated according to Prof. Schumann's work on the *Asclepiadaceæ* in Engler & Prantl's *Natürliche Pflanzenfamilien*. Small alterations have been made where they were deemed necessary, especially in cases where my own genera were concerned. Another little modification I have undertaken in shifting the *Ceropeginiæ* to the end of the *Tylophoreæ*, as through the presence of the hyaline anther-appendage the *Marsdeniaceæ* seem to approach more towards the *Asclepiadeæ*.

Suborder I.—PERIPLOCOIDEÆ.

I. CHLOROCODON Hk. f. in Bot. Mag. t. 5898 (1871); Bth. & Hk. f. Gen. Pl. ii. 745 (1876).

1. C. WHITEI Hk. f. *l. c.*
Natal.

II. TACCAZEA Dcne. in DC. Prodr. viii. 492 (1844).

1. T. WELWITSCHII Baill. in Bull. Soc. Bot. Par. ii. (1891) 897.
Zululand.

III. CHLOROCYATHUS Oliv. in Ic. Pl. t. 1557 (1887).

1. C. MONTEIROÆ Oliv. *l. c.*
Delagoa Bay.

IV. ECTADIUM E. Mey. Com. Pl. Afr. Austr. 188 (1837); Dcne. in DC. Prodr. viii. 500 (1844); Bth. & Hk. f. Gen. Pl. ii. 742.

1. E. VIRGATUM E. Mey. *l. c.*; Dcne. *l. c.*
Little Namaqualand.

V. CRYPTOLEPIS R. Br. in Mem. Wern. Soc. i. 69 (1809); Bth. & Hk. f. Gen. Pl. ii. 741 (1876). *Ectadiopsis* Bth. in Bth. & Hk. f. Gen. Pl. ii. 741 (1876).

1. C. MONTEIROÆ Oliv. in Ic. Plant. t. 1591 (1887).
Transvaal, Delagoa Bay.

2. C. CAPENSIS Schltr. in Verh. Bot. Ver. Brand. xxxv. 47 (1893).
Natal.

3. C. OBTUSA N. E. Br. in Kew Bull. 1895, 110.
Delagoa Bay.

4. C. OBLONGIFOLIA Schltr. *Ectadium oblongifolium* Meissn. in Hook. Lond. Journ. Bot. ii. 542 (1843); Walp. Rep. iv. 481. *Secamone acutifolia* Sond. in Linnæa, xxiii. (1850), 76; Walp. Ann. iii. 48 (1852). *Ectadiopsis oblongifolia* Bth. ex Jacks. Ind. Kew. ii. 822 (1893). *E. acutifolia* Bth. ex Jacks. *l. c.* 822 (1893).
Natal, Transvaal.

5. C. TRANSVAALENSIS Schltr. *Ectadiopsis cryptolepoides* Schltr. in Engl. Jahrb. xx. Beibl. 50, 10 (1895).
Transvaal.

VI. PENTOPÆTIA Dcne. in DC. Prodr. viii. 500 (1844); Bth. & Hk. f. Gen. Pl. ii. 741 (1876). *Leptopætia* Harv. Gen. Pl. Cap. ed. 2, 231 (1868).

1. P. NATALENSIS Schltr. in Journ. Bot. 1894, 257.
Natal.

VII. RAPHIONACME Harv. in Hook. Lond. Journ. Bot. i. 22 (1842); Bth. & Hk. f. Gen. Pl. ii. 745 (1876). *Apoxyanthera* Hochst. in Flora, xxvi. 78 (1843).

1. R. ZEYHERI Harv. *l. c.* 23 (1843).
Uitenhage.

2. R. DIVARICATA Harv. *l. c.* 23 (1843). ? *R. obovata* Turcz. in Bull. Soc. Imp. Nat. Mosc. xxi. pt. i. 250 (1848); Walp. Ann. iii. 45 (1852). *R. purpurea* Harv. Thes. Cap. i. 41, t. 66 (1859). *R. pubescens* Hochst. in Flora, xxvii. 827 (1844); Walp. Rep. vi. 480 (1846–7). *Apoxyanthera pubescens* Hochst. *l. c.* xxvi. 78 (1842).
Albany, Kaffraria, Griqualand East, Pondoland, Natal, Zululand, Orange Free State, Transvaal.

3. R. FLANAGANI Schltr. in Engl. Jahrb. xviii. Beibl. 45, 2 (1894). *R. scandens* N. E. Br. in Kew Bull. 1895, 111.
Kaffraria, Natal.

4. R. GALPINII Schltr. *l. c.* 14 (1894).
Transvaal.

5. R. MACRORRHIZA Schltr. *l. c.* xx. Beibl. 50, 10 (1895).
Natal.

6. R. PROCUMBENS Schltr. *l. c.* 11 (1895).
Transvaal.

7. R. VELUTINA Schltr. *l. e.* 12 (1895).
Transvaal.

(To be continued.)

GEORGE DIONYSIUS EHRET.

In the current number of the *Proceedings* of the Linnean Society, Miss Barton gives a translation of the autobiography of Ehret, which is preserved in the Botanical Department of the British Museum. It is a very interesting document, and incidentally corrects some of the particulars given in the brief accounts of this eminent artist hitherto published—the *Dictionary of National Biography*, for example, gives both the date and place of his birth incorrectly, in which latter error it is followed by the *Biographical Index of British Botanists*, where "Heidelberg" should be substituted for "Erfurt."

His father and mother were poor folk who supported themselves by the produce of their garden, and Ehret was taken from school early and apprenticed to his uncle, a gardener near Darmstadt. Here he kept up the practice of drawing, which he had learnt from his father, and was later employed in the Margrave's garden at Carlsruhe. After a few years he took service with Weinmann at Regensburg, and executed for him about 500 drawings. Weinmann seems to have treated him badly; he then obtained other work, and made a large collection of drawings of the wild and cultivated plants of Regensburg. His acquaintance with Trew seems to have been the turning-point of his career, and he continued to work for him up to the time of his writing his autobiography (1758). A MS. Life of Ehret by Trew is in the British Museum.

The account contains incidental references of much interest to Collinson, Miller, Cliffort, Linnæus, Bernard de Jussieu, and others. "Linnæus and I were the best of friends," he says; "he showed me his new method of examining the stamens, which I easily understood, and privately resolved to bring out a Tabella of it." Miss Barton adds an interesting note, partly taken from Trew's MS.

"This table or plate is printed on a half sheet, and contains 24 figures of the different numbers and connections of the stamens with the pistils. It was first published in Linnæus's 'Genera Plantarum,' first edition, Leyden, 1737, and is entitled 'Caroli Linnæi Classess (*sic*) Literæ.' The letters of the alphabet are used in the original drawing; but in the engraving they are replaced by figures. Ehret's name is omitted from the engraving. This plate, very badly copied, and, as is the custom with engravers on copper, very carelessly reversed, and without Herr Ehret's name, is also to be found in the edition of this work which was brought out at Leipzig in 1728 in 8vo after the sixth book-fair; but in the copy of the same edition which I possess the plate is omitted. The original drawing of the Linnean classes is preserved in the Botanical Department of the British Museum. It is signed 'G. D. Ehret, Fecit et edidit, Lug. Bat. 1736.' This drawing came into possession of the British Museum with a collection of Ehret's sketches and drawings." "With this Tabella," adds Ehret, "I earned some money; for I sold it at 2 Dutch gulden apiece; and almost all the botanists in Holland bought it of me." His account of Linnæus is not very complimentary to the great Swede: "When he was a beginner he appropriated every thing for himself which he heard of, to make himself famous."

When Ehret came to England, his principal friend was Dr. Mead, the Royal Physician. He married Susanna Kennet, a sister-in-law of Philip Miller, and found plenty of employment in illustrating such works as Brown's *History of Jamaica*, Hughes's *History of Barbadoes*, and Russell's *History of Aleppo*. In 1750 he was appointed to the Oxford Botanic Garden through the influence of Humphrey Sibthorp, who, however, says Ehret, "became exceedingly jealous of me because I was more thought of in botany than himself." Ehret retained this post only a year. He had before accepting it begun to give lessons in flower-painting "to the highest nobility of England," and the remainder of his life was devoted to this work. In 1757 he was elected a Fellow of the Royal Society.

It is unnecessary to speak of the extreme beauty and accuracy of Ehret's botanical drawings, but it may be worth while to mention that the Botanical Department is fortunate in possessing a large number of these, which should not be overlooked by those interested in matters of this kind.

We are indebted to the Council of the Linnean Society for permission to reproduce the accompanying portrait, which is from a photograph of an original painting in the possession of Mrs. Grover, the widow of one of Ehret's lineal descendants.

THE REPRODUCTION OF DIATOMS.

At the meeting of the Linnean Society on June 18th, Mr. George Murray, who had made a study of living pelagic Diatoms while on a cruise round the coasts of Scotland in March and April, on behalf of the Fishery Board for Scotland, exhibited a series of lantern slides, illustrating new forms of reproduction in Diatoms. He attributed the novelty of his observations, not only to the initiative of the Fishery Board, and especially of Dr. John Murray, but to the fact that he was almost the first botanist who had gone down to the sea in a ship armed with suitable apparatus for such observations. The first slide was a reproduction of a figure by Prof. Cleve ("Diatoms of the Arctic Sea," in *Bihang till K. Svensk. Akad. Handl.*, Bd. I. No. 13, pl. I. fig. 3, *a* and *b*) of *Biddulphia aurita* in what might be called an encysted state, showing a young *Biddulphia* within the mother-cell. A similar state of things was known in other Diatoms, e. g. *Biddulphia lævis* and *Navicula scotica*, as Mr. Comber informed him, where new valves are formed within old ones in nests of two or three. The second slide was of *Biddulphia mobiliensis*, and not only showed a young *Biddulphia* without spines or external markings within an old one, but a still earlier stage exhibiting the contraction and rounding off of the cell-contents of the mother-cell. On the same slide a similar rounding off was seen in the cell-contents of *Ditylum Brightwellii*. Slide III. showed a valve of *Coscinodiscus concinnus* with a new Diatom within it and, what carried matters a stage further, a valve with a pair of new Diatoms. Slide IV. showed the same species with cell-contents divided into eight and into sixteen rounded-off portions; and Slide V. free packets of eight and of sixteen young Diatoms held together by a fine membrane, as they had doubtless escaped from a parent-cell. Mr. Murray had observed numerous states which might or might not be intermediate between the two last states, but there was not sufficient certainty to justify him putting them on record. He believed that in this free packet stage the walls, though finely sculptured, were not or were imperfectly silicified, and capable of expansion and growth. His reason for this belief was grounded on the observation that all such early stages disappeared on "cleaning" with nitric acid, but he pointed out that there could be no certainty on this point unless after direct observation of individual cases, a matter involving difficulties of manipulation he had not yet overcome. In Slide VI. there were shown two diagrammatic figures of the same filament of *Chætoceras decipiens*, as observed in successive stages of contraction of the cell-contents, their rounding off, and the production by free-cell-formation of eight spore-like bodies.

In the case of *Biddulphia* and *Ditylum*, and in the first case of *Coscinodiscus*, where one new Diatom was produced, it appeared to be merely a case of so-called rejuvenescence of the parent-cell. In the case of *Coscinodiscus*, where preliminary divisions of the contents into eight and sixteen took place, it appeared to be reproduction by the free-cell-formation of new Diatoms, in their early stages capable of growth. In the case of *Chætoceras* the state of things resembled *Coscinodiscus*, but differed from it, since merely spore-like bodies were formed so far as had been observed. In all cases, whether one new Diatom or two, or eight or sixteen were formed within the parent, the result was a reproductive process of a kind not yet recorded in Diatoms, except in the case of the occurrence of a young *Biddulphia aurita* within the parent, as observed by Prof. Cleve, and in the case of *Biddulphia lævis* and *Navicula scotica*, as Mr. Comber informed him.

SHORT NOTES.

South Hants Plants (p. 135)—Mr. E. J. Tatum gives two records for S. Hants, viz., *Rosa stylosa* Desv. and *Crepis taraxacifolia* Thuill. Mr. Tatum omits to say that the *Rosa* has been found frequently in its commonest form (*systyla* Bast.). It is recorded in Townsend's *Flora* for Districts III, VI, VII, VIII, and for Districts I, II in this Journal (1889, p. 14); two other vars. of this *species collectiva* are given in the *Flora*, and another form of *R. stylosa* is mentioned on p, 415 of the *Botanical Exchange Club Report* (1893). *Crepis taraxacifolia* Thuill. seems to be spreading from county to county, and is no doubt often a recent introduction; it occurred in a field of artificial grass, near Sway, in 1890, in company with *C. nicæensis* Balb., and I have seen it on a railway bank since, between Christchurch and Brockenhurst, both localities in District III of S. Hants. *Chenopodium ficifolium* L. appeared at Porchester in 1893 as a similar example of probable introduction, having other casuals in its company; it may however be replaced in the list for S. Hants (see Townsend's *Flora*, p. 293).—Edward F. Linton.

Lepidium Draba in Ireland.—A fresh specimen of this has been sent me to name, from the roadside near Enniscorthy, Co. Wexford, It was found only in one spot, but as the species frequently establishes itself, it may be well to put the occurrence on record.—James Britten.

Vaccinium Oxycoccus in Somersetshire.—I was fortunate enough to find in a sphagnum bog on Blackdown, one of the highest of the Mendip range of hills, a small patch of *Vaccinium Oxycoccus* nicely in flower on May 30th, and again yesterday. I learn from Mr. W. White that it has only been found so far in one other locality in Somersetshire, the turf-moors near Glastonbury. It is many years since it was seen there, though it has been often searched for since. The patch on Blackdown is very small, a couple of yards or so either way, but having been now once found on the Mendips, I hope it may be found to grow in other localities there—W. F. Miller.

Alpinia (*Hellenia*) oceanica mihi (*A. nutans* K. Schum. non Rosc.).—Prof. Schumann has described this species, although not yet found in New Guinea, in the Flora of Kaiser Wilhelms Land,[*] and, supposing it to be a form described by Rumphius, on which Linnæus founded his species *Globba nutans*, named it *Alpinia nutans.* I cannot agree with him in this complicating of the synonymy. The matter may be sifted somewhat as follows. In the *Herbarium Amboinense* (lib. xi. cap. xxix.) Rumphius describes five species of *Globba*, of which the last, *Globba sylvestris*, was found in two forms; these he distinguishes as *Globba sylvestris major* and *Globba sylvestris minor sive florida.* Linnæus (*Mantissa*, ii.) did not see even varietal difference between them, and called *Globba sylvestris* of Rumphius *Globba nutans.* Subsequently Roscoe[†] thought his *Alpinia nutans* to be *Globba nutans* L., the two being in size and habit somewhat similar, but probably erred. Miquel[‡] saw in *Alpinia gigantea* Bl. one element of Linnæus' species, namely, Rumphius' form *major;* and there are many reasons which make one regard this as correct, Now Schumann sees in his *Alpinia nutans* the other element, namely, *Globba sylvestris minor*,—a decision the correctness of which is questionable. The following statements give the reasons for and against Schumann's identification:—

Alpinia nutans K. Schum. agrees with *Globba sylvestris minor* in its nodding inflorescence, persistent bracts, leaves less than two palms' breadth broad, and narrow petals. In other points, however, it differs thus:—leaves oblanceolate instead of lanceolate, and not undulate (*cf.* Rumphius' figure lxiii.), tapering very rapidly above to a shortly acuminate point, flower not conspicuously red, yellow, and white. The reader, remembering the difficulties which beset the identification of species of *Alpinia*, will form his own opinion upon the necessity of caution in this case. The probabilities seem to be in favour of the following decisions being correct.

Alpinia nutans Roscoe (1805), not known till described by Wendland[§] as *Zerumbet speciosum* in 1798.

Alpinia gigantea Blume (1830), apparently the plant figured by Rumphius as *Globba sylvestris major*, and therefore is *Globba nutans* L.

Alpinia nutans K. Schumann (1889) may possibly be, but probably is not, *Globba sylvestris minor*, but if so is also *Globba nutans*, L. For this last species I propose the name *A. oceanica.*

Hollrung collected *A. oceanica* on the two islets of Mioko and Kerawara belonging to the New Lauenburg group[||]; Warburg has obtained it from Kerawara and the north of New Britain. In the Kew Herbarium are specimens from the following sources:—Quadalcanar, Solomon Isles, Milne, 1855, — Admiralty Isles, Moseley, 'Challenger' Expedition,—and New Ireland, Barclay[¶].

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[*] Schumann u. Hollrung, *Flora von Kaiser Wilhelms Land.* Berlin, 1889, 28.

[†] In Smith, *Exotic Botany*, ii. 93, London, 1805; and *Monandrian Plants of the Order Scitamineæ*, t. 73, Liverpool, 1828.

[‡] *Floræ Indiæ batavæ*, iii. 605, Amsterdam, 1855.

[§] Schrader et Wendland, *Sertum Hannoverianum*, iv. 3, t. 19, Göttingen, 1798.

[||] *Flora von Kaiser Wilhelms Land*, loc. cit.

[¶] Bentham recognised it as a new species; Hooker's *Lond. Journ. of Bot.* ii. 235.

All these localities lie fairly close together, the most westerly being more than 1200 miles from Amboyna.

A. oceanica lies very near *A. scabra* Benth. from British India, and is easily distinguished from other species of the section *Hellenia* with a nodding inflorescence, such as *A. decurra* Ridley.

Baron von Hügel's specimens lead one to suppose that the curvature of the inflorescence becomes more marked as it grows older, being very slight when the buds first begin to open. In cases where the flowers are much crowded the axis of the inflorescence becomes twisted so as to obscure the $\frac{1}{2}$ divergence which is present. Such might account for the want of it in Rumphius' figure.—I. H. Burkill, in *Proc. Cambridge Phil. Soc.* ix. 93.

NOTICES OF BOOKS.

Further Observations on the Organization of the Fossil Plants of the Coal-Measures. By W. C. Williamson, LL.D., F.R.S., and D. H. Scott, F.R.S. Part ii.—The Roots of *Calamites.* Part iii.—*Lyginodendron* and *Heterangium.* [Philosophical Transactions, clxxxvi B. pp. 683–779.]

After completing nineteen memoirs dealing with the organization of the fossil plants of the Coal-Measures, the late Professor Williamson was fortunate enough to obtain the co-operation of Dr. D. H. Scott in beginning a new series of communications to the Royal Society, extending and revising the work of the earlier contributions. In Part i. of the second series, an extremely full account was given of the stems and fructification of the well-known Carboniferous genus *Calamites;* the genus *Sphenophyllum* was also dealt with in detail, and its autonomous nature clearly demonstrated. In Part ii. our knowledge of the former genus is rendered still more complete. For many years we have been familiar with the existence of root-like appendages to the nodes of calamitean stems; and comparatively recently, Prof. Renault of Paris proved the identity of the genera *Astromyelom* and *Calamites*, the former being simply the root of the latter. In the present memoir the histology of the *Calamites* root is described with great clearness and completeness, and the organic continuity of stem, roots, and rootlets satisfactorily established. The roots of *Calamites* differ from the stems in the absence of nodes, the usually solid pith, and the absence of canals accompanying the vascular bundles. At the periphery of the pith, which in the larger specimens is occupied by thin-walled parenchymatous cells, there occur several groups of primary xylem, showing a distinct centripetal arrangement of the tracheids; each group is triangular in form, with the spiral tracheids of the protoxylem occupying the apex. In a few exceptionally well-preserved sections, groups of primary phloem are seen alternating with the xylem. This typical root-arrangement of the primary xylem and phloem is beautifully shown in one of Mr. Brebner's admirable drawings in plate xvi. fig. 4. The nature of the secondary tissues has been satisfactorily determined from an examination of numerous roots in different stages of development. On the whole, the secondary wood is identical with that of the Calamite stem; immediately opposite to each protoxylem group there is usually found a medullary ray, which in some cases may be traced for a long distance through the wood. The presence of this medullary ray affords another piece of confirmatory evidence as to the practical identity in structure between the roots of *Calamites* and those of recent plants. Of the phloem, fewer and less distinct traces have been detected. Passing to the cortical tissues, a definite structural feature is recognised in the three well-marked zones; an inner cortex of continuous parenchyma, a middle lacunar cortex, and an outer zone of continuous parenchymatous tissue.

In some of the smaller root-branches, an extremely interesting feature is pointed out in the innermost layers of the cortex; next to the primary phloem there occur two layers of cells corresponding in position to the endodermis and pericycle, but the cells of the two layers "fit on to each other as if they had had a common origin." This suggests the double endodermis characteristic of *Equisetum*, and, if established, affords another illustration of the very intimate connection between the arborescent equisetaceous plants of the Coal-Measures and the recent Horsetails.

In the so-called rootlets of *Calamites* the pith of the older roots is usually absent; and the structure may be diarch or tetrach. In the thicker roots as many as twenty-five groups of primary xylem and phloem occur. The outermost cortical layer is characterised by thick external walls, and is spoken of as the epidermoidal layer. It would seem that a layer of more delicate cells was originally external to this protective epidermoidal tissue, but was cast off at a comparatively early stage of development.

The genus *Calamites* affords one of the most striking examples among palæozoic plants, of the very great importance of the application of detailed histological methods in palæobotanical investigations.

The memoir on *Lyginodendron* and *Heterangium* is undoubtedly one of the most important contributions to fossil botany published in recent years. The interest attached to the two genera is one which every student of plant evolution cannot fail to appreciate. None of the records of the past are of such importance as those which enable us to bridge over gaps between existing classes of organisms. We have previously learnt something of intermediate plant types, *e.g.* the palæozoic genera *Poroxylon*, *Protopitys*, *Myeloxylon*, and others; but of *Lyginodendron* and *Heterangium* our knowledge has been rendered much more complete, and many new characters of primary importance are clearly demonstrated in this admirable piece of investigation.

Lyginodendron.—Fragments of stems, petioles, and foliage of this genus are fairly abundant in the calcareous nodules or coal-balls of Lancashire and Yorkshire. Although no undoubted examples of impressions or casts have so far been recognised, it is possible to restore with a considerable degree of probability the general form and habit of the plant. To quote Williamson and Scott's words—"We must, therefore, picture *Lyginodendron* to ourselves as having a tall, upright stem rising to a height of several feet, and bearing somewhat remote, spirally arranged, highly compound fern-leaves. The base of the stem, where the adventitious roots were given off, must have been buried for some depth in the earth or mud." The centre of the stem was occupied by a parenchymatous pith containing characteristic "nests" of sclerous cells. At the periphery of this medullary tissue, occurs a ring of detached strands of primary xylem, each consisting of spiral, scalariform and pitted tracheæ with a small amount of parenchyma. External to these primary groups is a ring of secondary wood, made up of radially arranged pitted tracheæ and medullary rays; the phloem consists of parenchyma and sieve-tube-like elements, and, like the xylem, is traversed by medullary ray cells. In some specimens patches of primary phloem have been recognized external to the secondary phloem, and between the secondary xylem and phloem a well-marked cambium is shown in wonderful perfection in some of the drawings accompanying the paper. Passing beyond the vascular tissue, we find a pericycle which at an early stage in the growth of the plant gave rise to a periderm. The cortex proper consists internally of parenchymatous tissue containing nests of sclerous cells; external to this, alternating radial bands of parenchyma and sclerenchyma constitute the exceedingly characteristic outer cortex of the stem. Secretory sacs are abundant in the pith, medullary rays, and inner cortex. Leaf-trace bundles are constantly seen in transverse sections on their way out to the petioles. Those met with in the secondary xylem, are in the form of single groups of primary xylem with a fan-shaped group of secondary tracheæ on the external face of the primary strand. If such a leaf-trace bundle be followed to the petiole, it is found to pass through five internodes before entering the pericycle; during this part of its course it loses its secondary xylem, and begins to divide into two bundles. Finally the twin bundles pass gradually outwards until they enter the petiole. The primary xylem strands of the stem have been shown to be the downward prolongations of the leaf-traces; hence the bundle-system of *Lyginodendron* is essentially a leaf-trace system.

The most important points with regard to the detailed structure of the primary bundles are (1), their collateral nature, and (2), the occurrence of the protoxylem in an internal position in each primary xylem-strand. In short, the structure of each primary bundle agrees very closely with that of the foliar bundles in recent Cycads. The secondary wood also exhibits a striking resemblance to the secondary wood of cycadean stems.

The petioles of this genus are of the type previously known as *Rachiopteris aspera* Will., and the pinnules are clearly such as conform to the characters of a typical *Sphenopteris*. It is a fact of importance that the collateral leaf-trace in the stem assumes a concentric structure as it passes into the petiole. Finally, it is now perfectly clear that Williamson's *Kaloxylon Hookeri* is the adventitious root of *Lyginodendron*.

Passing to the second genus *Heterangium*, there are many points of resemblance to the preceding type, but at the same time some striking differences in the structure of both stele and cortex. Instead of the central pith of *Lyginodendron*, we have in *Heterangium* an axial group of primary xylem tracheæ interspersed with bands of conjunctive parenchyma. At the periphery of the stele occur the smaller elements of the wood. In most examples there is a ring of secondary xylem and phloem surrounding the central primary xylem, and beyond this a pericycle, and an inner cortex containing groups of characteristic radially elongated bands of sclerous cells. The more external part of the cortex consists of alternate plates of parenchyma and sclerenchyma as in *Lyginodendron*. At the peripheral part of the primary xylem region there are definite groups of tracheids similar to those of the primary xylem strands of the preceding genus, and here too the protoxylem elements are situated internally in each xylem-strand. The term mesarch has been adopted for xylem groups in which the protoxylem occupies this internal position. The course of these peripheral strands, which are continuous with the leaf-traces, differs somewhat from that of the foliar bundles in *Lyginodendron*, but it is impossible to deal with the two genera in any detail. In one species, *Heterangium tilæoides* Will., the tissues of the secondary phloem have been preserved in unusual perfection, the sieve-plates being very clearly shown on the lateral walls. The leaves and petioles agree fairly closely with those of *Lyginodendron*, and a similar correspondence is found as regards the adventitious roots.

Having thus sketched in rough outline some of the characteristic features of these two genera, we must in conclusion draw attention to their affinities with recent forms. In neither case have we as yet any satisfactory evidence as to the nature of the reproductive organs, and are thus left to discuss the question of systematic position on the evidence of vegetative structures alone. *Heterangium* is the more fern-like of the two forms; the structure of the stele agrees in essentials with that of a monostelic fern such as *Gleichenia*. In both fossil genera the leaves and petioles are distinctly of the fern type. On the other hand, the secondary wood of the stem resembles that of a Cycad. The primary xylem bundles of each genus are practically identical with those of a recent cycadean petiole, in the position of the protoxylem elements. The roots, again, are fern-like in character, and have been compared with those of the *Marattiaceæ*. "We have seen how extraordinary a combination of characters belonging to various groups these genera present. In different parts of their structure they have been found to present points in common with *Gleicheniaceæ*, *Osmundaceæ*, *Marattiaceæ*, and *Cycadeæ*. The view of the affinities of *Lyginodendron* and *Heterangium* which we desire to suggest is, that they are derivatives of an ancient and 'generalized' fern-stock, which already show a marked divergence in the cycadean direction." . . . . "We think the existence of a fossil group on the borderland of Ferns and *Cycadeæ* is now well established. The relation of these forms to those very ancient Gymnosperms, the *Cordaiteæ*, is a difficult and most interesting question, which cannot, however, be discussed here." It is impossible to do justice to this most important work in a brief notice. The value of researches such as this can hardly be over-estimated; it is by means of this class of work that we may confidently hope to derive the greatest possible assistance in phylogenetic inquiries.

Mr. Brebner's drawings deserve the highest praise; they are models of what illustrations should be, at once scientifically accurate and artistically executed.

A. C. Seward.

The Flora of the Alps: being a description of all the Species of Flowering Plants indigenous to Switzerland; and of the Alpine Species of the adjacent Mountain Districts of France, Italy, and Austria, including the Pyrenees. By Alfred W. Bennett, M.A., B.Sc., F.L.S. London: Nimmo. 2 vols. 8vo, pp. xxii, 165, 223. 120 coloured plates. Price 30s. net.

If excellent paper, clear type, and attractive binding were all that is necessary to make a good book, Messrs. Nimmo would have produced an admirable *Flora of the Alps.* Unfortunately these are but externals—the mine, anise, and cummin, so to speak; and the attention bestowed upon them cannot atone for the neglect of the weightier matters which characterizes this expensive work.

The "120 plates," which should form a useful and important feature in a book of this kind, are for the most part, though this is nowhere stated, reproductions of the very unsatisfactory figures in Mr. D. Wooster's *Alpine Plants,* published in 1874; and we cannot help suspecting that the acquiring of these by the publishers formed the *raison d'être* of the present work. Some of them are bad beyond belief—for example, *Soldanella alpina, Gentiana lutea, Paradisia, Astrantia,* and *Viola biflora*—the last absolutely comic in its badness; some can only have been introduced because the blocks were ready to hand, *e.g.*, a plate lettered *Helianthemum roseum* (a hideous presentment of a "rose-coloured" form of the common Rock-rose) and an extraordinary, if not impossible, monstrosity of the Fritillary, which can hardly be considered an alpine flower. Both in colouring and drawing, these figures may take rank among the worst examples of colour-printing; they were bad enough when first produced, but their reissue at the present time is inexcusable, in the face of the great advance which has been made in this style of reproduction.

It might have been hoped that the letterpress would to some extent compensate for the badness of the illustrations: this again is far from satisfactory. The botanical tourist will save time, space, and money, and gain immeasurably in efficiency, by the purchase of Mr. Paitson's translation of Gremli's admirable *Excursionsflora für die Schweiz,* noticed in this Journal for 1889, p. 315; the ordinary traveller will effect all these economies and lose nothing in helpfulness if he (or she) obtains M. Correvon's *Flore Coloriée de Poche* (see Journ. Bot. 1895, 95). The tourist does not want the complete Flora of Switzerland which Messrs. Nimmo, in the title of their book, profess to supply; and the botanist will hardly find it. A clavis to the species, such as that given by Gremli, renders a lengthened description unnecessary, but Mr. Bennett gives us no help of this kind, and his diagnoses seem to us in many cases insufficient.

A brief examination of one genus—*Cerastium*—will show how Mr. Bennett has treated his subject:—

"The following English lowland species of Mouse-ear Chickweed are found also in Switzerland:—*C. glomeratum*, Fr.; *semidecandrum*, L.; *triviale*, Lk.; *arvense*, L.; *vulgatum*, L.; *viscosum*, L. *C. brachycarpum*, Schm., and *suffruticosum*, L., are probably mountain forms of *arvense;* and *C. macrocarpum*, Sch., of *vulgatum*. *C. brachypetalum*, Pers., is very nearly allied to *glomeratum*. *C. glutinosum*, L., covered with a glutinous down, is a Southern lowland species."

Here the four names *glomeratum*, *triviale*, *vulgatum*, and *viscosum* stand for as many plants, but it is certain that they only represent two of our English species: *glomeratum* "Fr." should be assigned to Thuillier and for "*brachycarpum* Schm." we must read "Schur": no *glutinosum* is assigned to Linnæus in Mr. Jackson's *Index*. Among the "more or less alpine" species, of which a descriptive enumeration follows, we find "*C. lanatum* Koch," by which *C. lanatum* Lam. is probably meant. Mr. Bennett rightly says that "the specific characters are often very difficult to determine;" but he has not succeeded in contrasting these in a helpful manner. If, for instance, we put side by side the characters given for *C. alpinum* and *C. latifolium*, we shall find that they are not mutually exclusive; the characters assigned to the one are so compatible with those of the other, that all might apply to the same plant.

"*C. alpinum*, L.	"*C. latifolium*, L.
"Usually more or less glandular-hairy, stem 1–5-flowered, with rosettes of leaves, flower-stalk oblique after flowering, sepals obtuse, with a membranous margin; high altitudes; frequent."	"Leaves ovate-elliptical, stiff, brittle, flowers large, few, petals more than twice as long as sepals, deeply bifid, capsule nearly globose; high; Switzerland, Dauphiny."

We are sorry that we cannot endorse the favourable opinion of a reviewer in the *Daily Chronicle*. "The descriptions," says this authority, "are, it is true, of a technical character; but is there a tourist who has not heard of the petals and sepals and even [!] of the anthers? Armed with this amount of knowledge, there will be no great difficulty in running to earth a given plant." If this writer were shut up in a room with Mr. Bennett's book and a dozen "given plants," we think he would soon alter his opinion; it would be as reasonable to say that a man would be able to read an Arabic work because he had learned the English alphabet. The *Spectator* considers the plates "in most cases exceedingly faithfully coloured;" it is charitable to suppose that the reviewer is afflicted with Daltonism.

The introduction of all the lowland plants of Switzerland into a book called "The Flora of the Alps," seems to us a mistake: no one wants them, and they add to the bulk of the work. But they afford an opportunity for the introduction of a few more of the wretched figures from Mr. Wooster's book—*e. g.* the hideous monstrosity of *Fritillaria Meleagris* already referred to. By the way, what does Mr. Bennett mean by describing the flowers of this as "*yellow* or variegated with purple"? He must have forgotten his Matthew Arnold—

> "I know what white, what purple fritillaries
> The grassy harvest of the river fields
> Above by Eynsham, down by Sandford, yields."

The best part of the book, next to its get-up, is the brief but interesting introduction. There is a short glossary, an index of genera, and one of English names, among which we are surprised to find "Moon-flower" assigned to *Lunaria rediviva.* But it is impossible to recommend those who are planning a holiday in Switzerland to add these volumes to their *impedimenta.*

BOOK-NOTES, NEWS, &c.

Mr. I. H. Burkill publishes in vol. ix. of the *Proceedings of the Cambridge Philosophical Society* (Feb. 10, 1896) an enumeration of a small collection of plants from New Britain, collected by Baron A. von Hügel in 1875. One new species, *Eranthemum Huegelii*, is described, and a new name, *Alpinia oceanica*, is proposed for a plant of complicated synonymy. We reproduce on p. 320 Mr. Burkill's note on this species.

Mr. John C. Willis is leaving England for Peradenya, where he will assist Dr. Trimen, and ultimately succeed him in the direction of the Gardens, from which Dr. Trimen will shortly retire.

The Messrs. Linton have distributed the first fascicle of their "Set of British Hieracia," which should be very helpful to students of this critical genus. It contains twenty-five "species," fourteen of which, so far as is known, are endemic, "though some of them have affinities with Scandinavian types." The distributors say, in the note which accompanies the specimens: "Objection has been made to the use of the term 'species' in connection with the members of this genus, and, perhaps, the grouping of allied forms together as subspecies under an aggregate (*sp. collectiva*), may be the best solution of the difficulty; following the course in some other groups which has been adopted with *H. murorum* in the London Catalogue. But it must be borne in mind that experiment abundantly shows that these allied forms usually have their differentia brought out more distinctly in cultivation; and that in all the numerous cases tried, the forms or species come true from seed, and are fixed quantities, not dependent on soil or situation, whatever classificatory term be applied to them. The following numbers appear to be certainly endemic, from information supplied by Mr. Dahlstedt:—2, *H. lingulatum;* 4, *H. Marshalli;* 5, *H. chrysanthum* (allied to a Norwegian form); 6, *H. centripetale;* 8, *H. clovense;* 10, *H. farrense;* 11, *H. proximum;* 14, *H. scoticum;* 15, *H. anguinum;* 16, *H. rivale* (allied to *H. sagittatum*, Ldbg., fide Dahlstedt); 20, *H. petrocharis.*"

We are glad to learn that the Exchange Club for Mosses and Hepatics, proposed in this Journal for February (p. 88), is now an accomplished fact. Those desirous of joining should communicate with the Rev. C. H. Waddell, Saintfield Vicarage, Co. Down.

Mr. G. F. Scott Elliot's *Flora of Dumfriesshire* has made its appearance; we hope to notice it in an early issue.

The issue of the *Bulletin of Miscellaneous Information* has apparently been suspended, no number having been published since that dated "February," but printed in March.

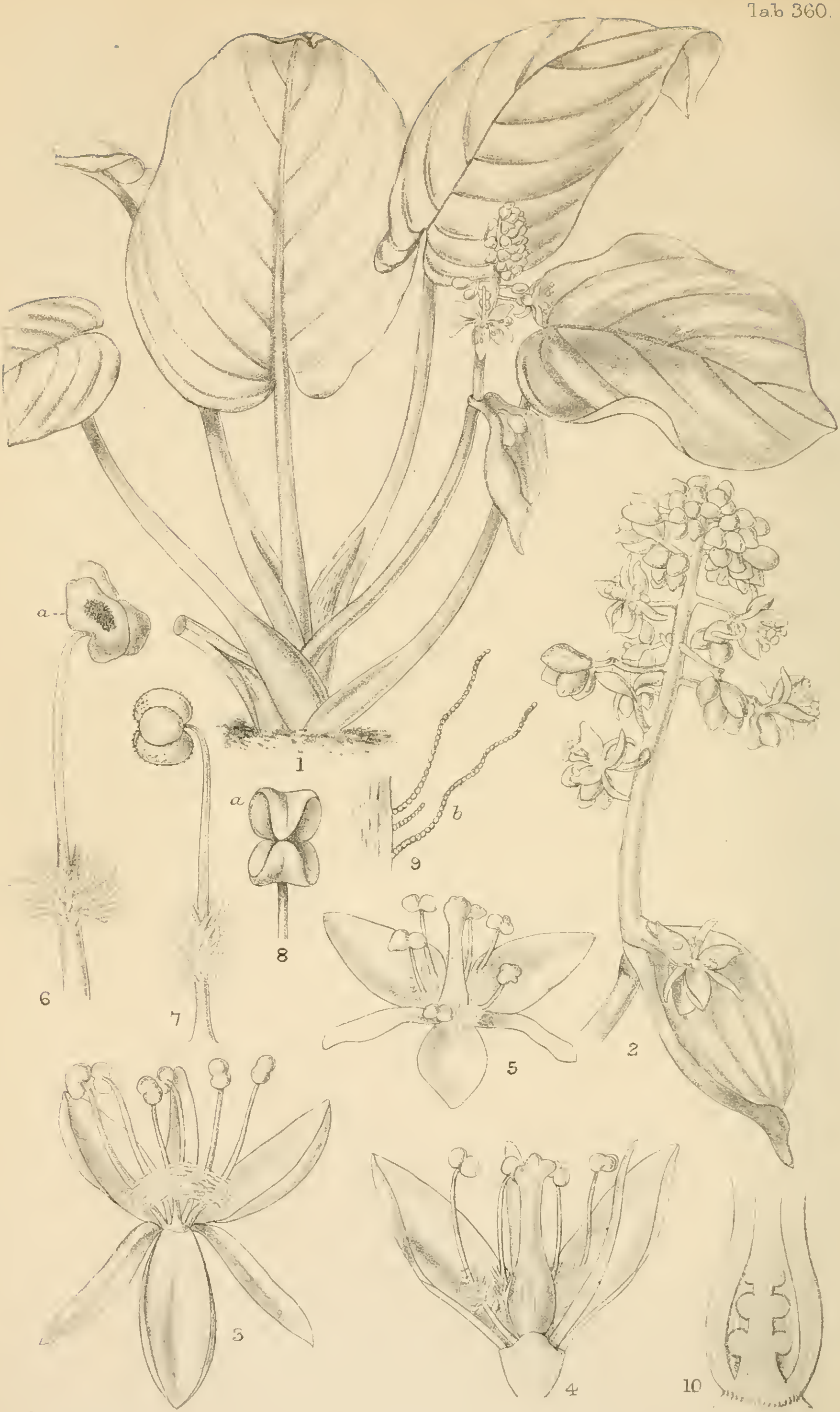
The last part (May 15) of the *Flora Brasiliensis* is devoted to the *Bignoniaceæ*, which have been elaborated by Prof. Bureau and Dr. K. Schumann.

James Lloyd, well known as the author of the *Flore de l'Ouest de la France*, of which the first edition appeared in 1854 and the last in 1886, died at Nantes on May 10th, in his eighty-seventh year.

We have received the first part of a folio work by M. T. Husnot, entitled "Graminées," which is to be completed in four parts. It will contain descriptions and figures of the cultivated and indigenous grasses of France, Belgium, Switzerland, and Great Britain, with particulars of distribution, history, &c., and, judging from the specimen before us, will be a useful addition to the literature of the subject.

Mr. Druce has issued a prospectus of his forthcoming *Flora of Berkshire*, which will be published by the Clarendon Press, and is "dedicated by special permission to Her Most Gracious Majesty the Queen." "The work, which will extend to a volume of about 500 pages, is intended to be not only a catalogue, but a history of the plants of the county. The various botanical writers since 1550 have been pretty exhaustively consulted, and no pains have been spared in personally visiting nearly every parish in the county, in order to make the work as complete as possible. In the Flora about a thousand flowering plants and ferns will be enumerated, in addition to a large number of varieties and plants of casual occurrence. In order to show their distribution through the county more completely, Berkshire has been divided into five botanical districts, which are based upon the river drainage. The plant distribution through these, and also through the border counties, will be shown in a tabular form. Brief sketches of the topography, the meteorology, the geology, river drainage, and the physiography of the botanical districts will be given. The work will also include short biographies of the various botanists who have investigated Berkshire botany."

Tab 360.



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Jos De Alwis del
R. Morgan lith.

West, Newman imp

Spatholirion ornatum *Ridl.*

A NEW GENUS OF COMMELINACEÆ.

By H. N. Ridley, M.A., F.L.S.

(Plate 360.)

About two years ago Mr. Machado, who was residing at Legeh—a little-explored region in the north-east of the Malay Peninsula to the north of Tringganu—sent to the Botanic Gardens of Singapore a number of very interesting plants, some dried and others alive. Among the latter was a single plant of rather striking appearance, which in due course flowered, and proved to be a very distinct genus of *Commelinaceæ*. It was propagated by division, and a plant is now in the Royal Gardens, Kew. The following is a description of it:—

Spatholirion, gen. n. Herba acaulis, foliis ovatis cordatis obtusis petiolatis, petiolis pubescentibus, laminis æquantibus, crassiusculis. Scapus lateralis axillaris quam folia brevior erectus paniculatus, basi longe nudus. Panicula pauci-ramosa, ramis brevissimis, primo in spatha magna cymbiformi mucronata inclusa. Flores tenues dioici; feminei pauci in panicula brevissima juxta spatham; masculi plures in parte terminali. Feminei: Sepala 3 ovata obtusa extus pubescentia. Petala linearia glabra breviora. Stamina 6 sterilia, aliter iis floris masculi similia. Ovarium cylindricum in stylo crasso tereti attenuatum. Stigma capitatum trilobum. Ovula plura. Masculi minores: Sepala lanceolato-ovata extus pubescentia. Petala subæquilonga linearia acuta. Stamina 6, filamentis gracilibus erectis cum fasciculis capillorum supra basin ornatis. Antheris terminalibus globosis, bilocularibus. Pistillum nullum. Capsula (immatura) oblonga, triquetra.

S. ornatum, sp. unica. Folia 6–7, laminis 4 pollices longis et æquilatis atroviridibus superne glabris maculis albis ornatis inferne pubescentibus purpurascentibus, petiolis quatuor pollices longis vel ultra crassiusculis canaliculatis basi vaginantibus brunneo-pubescentibus. Scapus basi nudus et cum rachide et ramis purpureus, ad sex pollices longus, ramis vix ¼ pollicis longis. Spatha persistens crassa ovata cymbiformis mucronata 1½ poll. longa, purpurascenti-viridis, primo paniculam omnino involvens, mox aperta deflexa. Flores tenues rosei, vix ultra ¼ pollicis lati, feminei 3–4 in cymula brevissima spatham approximati. Masculi plurimi minores in panicula brevi-ramosa terminali basi longe (ad pollicem) nuda. Flores feminei: Sepala extus pubescentia rosea. Petala breviora angustiora glabra rosea. Stamina quam sepala breviora sterilia. Pistillum glabrum aurantiacum, ovarium cylindricum superne in stylo tereti crasso attenuato. Stigma mediocre capitatum trilobum. Flores masculi paullo minores: Sepala angustiora extus pubescentia rosea. Petala æquilonga pallidiora, angustiora acuta. Stamina 6, filamentis gracilibus flavis, fasciculis capillorum moniliformium supra bases munitis; antheris terminalibus globosis 4-lobis. Pistillum nullum.

Legeh, ad Tomoh, coll. A. D. Machado.

This is a stemless plant, which can be propagated by offshoots from the base. The leaves are dark green above, ornamented when young with white markings; beneath they are of a rich purple. The petioles are covered with a short brown pubescence. From the axil of a leaf appears a stem bearing a large purplish spathe, which soon opens, disclosing the inflorescence. The flowers are unisexual, the females borne at the base on a short branched cyme remain in close proximity to the persistent spathe. The males are arranged in a short branched panicle at some distance above the females; they are very much more numerous and smaller. The flowers open singly on each branch of the panicle, and are rather fugacious, as is usual in the Order. The sepals are rosy, the petals much narrower and white. The stamens bear tufts of yellow hairs on the filaments; they seem to be very similar in both sexes, but the females appear to produce no pollen. In the male flowers the pistil is quite absent; I could find no rudiment of it. Though I fertilized several flowers, they did not set fruit, but on one occasion the ovary so far developed as to assume the form of an angled oblong capsule.

The affinity of the plant is with the monotypic *Streptolirion*, a native of India, from which it is distinguished at once by habit, that plant being a climber, and having the flowers always bisexual and similar.

Description of Plate 360.—Fig. 1. Whole plant (half nat. size). 2. Panicle (nat. size). 3. Male flower. 4, 5. Female flowers. 6. Stamen of female flower. 7. Stamen of male flower. 8. Sterile anther of female flower (front view). 9. Hairs of sterile stamen. 10. Ovary. Figs. 3–10 variously enlarged.

THE MOSSES OF THE UPPER DOVEY.

By May Roberts.

The following is a list of the Mosses gathered in the watershed of the Upper Dovey, in the county of Merioneth. The region examined is bounded below by the confluence of the Cowarch stream at Aber Cowarch, a village about a mile north of Dinas Mawddwy, and 319 ft. above sea-level. It ranges upwards to the high lands which rise steeply on either side to an altitude of 1500 to 2000 ft., and culminates in the summit of Aran Mawddwy, at an elevation of 2970 ft. The chief gathering grounds were the bogs on the moors, and the "nants" which descend from these to the main valley.

The central mass and summit of Aran Mawddwy consists of porphyry and volcanic ash, and the Dovey has its source in a small lake at the foot of the sheer precipice which forms the eastern face of the mountain; with this exception, the geological formation of the district belongs entirely to the Bala Beds, which here consist of shales and flags. The region is traversed obliquely in a north-easterly direction by a thin band of Bala limestone. The Mosses were gathered at Easter and Whitsuntide, and in the months of August and September.

The list does not pretend to be exhaustive, but, as the district does not appear to have been previously worked, it seemed not undesirable to publish an enumeration of those Mosses which have hitherto been found. The list contains 208 species and 22 varieties, collected from an area of about 16,000 acres. I am indebted to the Rev. H. G. Jameson and Mr. Holt for having kindly verified the naming of the species and varieties in the collection. The nomenclature followed is that of the *London Catalogue of Mosses.*

Sphagnum acutifolium Ehrh.—Var. *rubellum* Wils.—*S. strictum* Lind.—*S. squarrosum* Pers.—*S. intermedium* Hoffm.—*S. cuspidatum* Ehrh.—*S. molle* Sull.—*S. subsecundum* Nees.—Var. *contortum* Schultz. —Var. *obesum* Wils.—*S. papillosum* Lindb.—Var. *confertum* Lindb. —*S. cymbifolium* Ehrh.

Andreæa petrophila Ehrh. — *A. alpina* Turn. Abundant on the summit of Aran Mawddwy.—*A. Rothii* W. & M.—Var. *falcata* Lindb. —*A. crassinervis* Bruch. Frequent on alpine rocks.

Gymnostomum rupestre Schwg. — *G. curvirostrum* Ehrh. — *G. microstomum* Hedw.—*G. tortile* Schwg.

Weissia viridula Brid.—*W. crispula* Hedw.—*W. cirrhata* Hedw.

Rhabdoweissia fugax Hedw.—*R. denticulata* Brid.

Oncophorus crenulatus Braithw.

Cynodontium Bruntoni Sm.

Dichodontium pellucidum L. About the beds of streams, frequently in fruit.—Var. *strictum* Braithw.—*D. flavescens* Lindb.

Dicranella squarrosa Schrad. Abundant.—*D. cerviculata* Hedw. — *D. varia.* On clay banks, frequent. — *D. rufescens* Turn. — *D. subulata* Hedw. — *D. heteromalla* Hedw. Abundant throughout the district.—Var. *sericea* Schpr.

Dicranum Scottianum Turn.—*D. scoparium* Hedw. A small form frequently found on trees.—*D. majus* Turn.—*D. palustre* Bry. Brit. Moorland bogs, frequent.

Dicranodontium longirostre Br. & Sch.

Campylopus atrovirens De Not. On wet rocks, common. — Var. *epilosus* Braithw.—*C. brevipilus* Br. & Sch.—*C. flexuosus* Brid. On turfy ground, common. — Var. *paradoxus* Braithw. — *C. fragilis* Br. & Sch. Moorlands, frequent.—*C. pyriformis* Brid.

Leucobryum glaucum L.

Pleuridium nitidum Hedw.—*P. subulatum* L. Very common.

Seligeria recurvata Hedw. Frequent on the Bala limestone.

Blindia acuta Br. & Sch.

Pottia truncata L. Common on fallow ground.

Didymodon rubellus Br. & Sch. Frequent.—*D. cylindricus* Br. & Sch. Wet rocks and by waterfalls. — Var. *Holtii* Braithw. Frequent on dripping rocks.

Ditrichum homomallum Hedw. Banks and stony ground, frequent.

Trichostomum tophaceum Brid.

Barbula muralis L. Common on walls. — *B. unguiculata* Dill. Frequent on banks. — *B. fallax* Hedw. — *B. rigidula* Dicks. — *B. cylindrica* Tayl.—*B. revoluta* Schwg.—*B. convoluta* Hedw. Frequent on walls. — *B. tortuosa* L. Abundant on rocks and banks. — Var.

fragilifolia (Juratz). Found on Bala limestone where it crosses Cwm Dyniewyd and Blaen-y-pennant. — *B. subulata* L. Frequent on walls and banks.—*B. ruralis* L.

Ceratodon purpureus L. Common on banks, walls, and sandy ground.

Encalypta streptocarpa Hedw. Abundant on walls and Bala limestone.

Grimmia apocarpa L. Very common on rocks. — Var. *rivularis* Brid. Abundant on mill-wheel at Aber Cowarch, and on boulders in Dovey. —Var. *pumila* Schpr. Growing frequently with *G. apocarpa.*— *G. torquata* Grev. On dry alpine rocks.—*G. Doniana* Sm. Very abundant on rocks and stones.—*G. ovata* W. & M.

Rhacomitrium patens Dicks. Wet granite rocks.—*R. ellipticum* L. —Var. *denticulatum* Wills.—*R. protensum* Braun. On wet rocks.— *R. sudeticum* Bry. Brit. Wet alpine districts.—*R. heterostichum* Hedw. Frequent, rocks in subalpine districts. —Var. *alopecurum* Bry. Brit. (*Grimmia affinis* Lindb.). Very abundant on wet granite rocks.— Var. *gracilescens* Bry. Brit. (*Grimmia obtusa* Lindb.). Abundant on rocks on Aran.—*R. fasciculare* Schrad. Rocks in subalpine districts. —*R. lanuginosum* Hedw. Common on rocks, frequently in fruit.— *R. canescens* Hedw. Very common on sandy ground.—Var. *ericoides* Schrad. Near the margin of streams.

Ptychomitrium polyphyllum Dicks. Abundant.

Amphoridium Mougeottii Br. & Sch. Moist shady rocks, frequent.

Zygodon viridissimus Dicks. On trees, rather rare.

Ulota Bruchii Hornsch. On trees. — *U. crispa* Hedw. Very common.—Var. *intermedia* Schpr.

Orthotrichum rupestre Schleich. On trees. — *O. affine* Schrad. On trees, rather plentiful. — *O. stramineum* Hornsch. — *O. tenellum* Bruch. On poplar trees.—*O. diaphanum* Schrad. On trees, rather frequent. — *O. Lyellii* H. & T. On old trees, very abundant. — *O. leiocarpum* Br. & Sch. On trees, common.

Splachnum sphæricum L. fil. Wet moorlands.

Entosthodon ericetorum Bals. Clay banks, frequent.—*E. Templetoni* Hook. Wet rocks and banks, not common.

Funaria hygrometrica L. Very common.

Bartramia ithyphylla Brid. On banks and crevices of rocks, frequent. — *B. pomiformis* L. Banks and clefts of rocks, very common.—*B. Halleriana* Hedw. Damp rocks, common.

Philonotis fontana L. About springs and streams, abundant.

Breutelia arcuata Dicks. Wet rocks and banks, abundant; fruit rather rare.

Webera polymorpha Hoppe. — *W. elongata* Dicks. — *W. nutans* Schreb.—*W. cruda* Schreb. Alpine rocks, rather rare.—*W. albicans* Wahl. Abundant in fields and on clay banks.

Zieria julacea Schpr. Crevices of rocks on Bala limestone.

Bryum inclinatum Swartz. — *B. intermedium* W. & M. Walls, not common. — *B. bimum* Schreb. Bogs, frequent. — *B. murale* Wils. Walls, not uncommon.—*B. alpinum* L. Very abundant on most alpine rocks. — *B. cæspiticium* L. Walls and rocks, common. — *B. argenteum* L. Walls, not common. — *B. capillare* L. Very common.—*B. pallens* Swartz. Stones by streams, very abundant.—*B. pseudo-triquetrum* Hedw. Subalpine bogs and wet rocks, very abundant.—*B. filiforme* Dicks. Wet places on the mountains, frequent.

Mnium affine Bland. Frequent.—*M. undulatum* Hedw. Shady woods; fruit abundant in a damp shady bank; capsules 10–26 in one perichætium. — *M. rostratum* Schrad. Shady banks, not uncommon. — *M. hornum* L. Frequent throughout the district. — *M. stellare* Hedw. On Bala limestone, rather rare. — *M. punctatum* Hedw. Wet rocks, very abundant.

Aulacomnium androgynum L. Gravelly bank, rather rare. — *A. palustre* L. Moorland bogs, abundant; fruit plentiful. A form found bearing a cluster of leaf-like gemmæ in bogs with the type.

Tetraphis pellucida L. Rotten stumps of trees, not uncommon.

Tetradontium Brownianum Dicks. Damp gritstone rock, abundant.

Oligotrichum hercynicum Ehrh. Sandy ground, frequent in a barren state.

Atrichum undulatum L. Very abundant.

Pogonatum aloides Hedw. Clay banks, very frequent. — Var. *minus* Bry. Eur. On dry rocks, rare.—*P. urnigerum* L. On banks in subalpine districts, common. — *P. alpinum* L. Stony ground, abundant.

Polytrichum formosum Hedw. Woods, rather rare.—*P. piliferum* Schreb. Dry banks and heaths, very abundant. — *P. strictum* Banks. Abundant.—*P. commune* L. Very common.

Diphyscium foliosum L. Turfy places and wet rocks, abundant.

Buxbaumia aphylla L. Found once in a dingle; it has disappeared from the locality.

Fissidens bryoides Hedw. Frequent. — *F. pusillus* Wils. Wet rocks. — *F. osmundoides* Hedw. Bogs, frequent. — *F. decipiens* De Not. — *F. adiantoides* Hedw. — *F. taxifolius* L. Clay banks, frequent.

Fontinalis antipyretica L. In the streams, abundant. — *F. squamosa* L. Not so common.

Hedwigia ciliata Dicks. Alpine rocks, rather rare.

Antitrichia curtipendula L. Walls and trees, not frequent.

Neckera pumila Hedw. — *N. crispa* L. Trees and rocks, not uncommon.—*N. complanata* L. Trees, not common.

Pterygophyllum lucens L. Moist banks, abundant.

Heterocladium heteropterum Bruch. Wet rocks, abundant.

Thuidium tamariscinum Hedw. Frequent.

Thamnium alopecurum L. Very plentiful on wet rocks, but the fruit is rarely produced.

Climacium dendroides L. Near the spray of a waterfall.

Isothecium myurum Poll. On trees, abundant.

Homalothecium sericeum L. Frequent.

Camptothecium lutescens Huds. Rather rare.

Brachythecium glareosum B. & S. — *B. albicans* Neck. — *B. velutinum* L. Roots of trees, not common.—*B. rutabulum* L. Common throughout the district.—*B. rivulare* B. & S. Streams and boulders in Dovey, abundant. — *B. populeum* Hedw. Trees and banks, frequent.—*B. plumosum* Swartz. Rocks in streams, very abundant.

Eurhynchium myosuroides L. Abundant. — *E. striatum* Schreb. Shady woods, frequent. — *E. piliferum* Schreb. Very common.— *E. prælongum* Dill. Woods; frequently in fruit.

Hyocomium flagellare Dicks. In streams and on rocks, abundant.

Rhynchostegium confertum Dicks. On walls, frequent.—*R. murale* Hedw. Walls, not common. —*R. ruscifolium* Neck. On stones in streams, very abundant.

Plagiothecium pulchellum Hedw. — *P. denticulatum* L. Moist banks, very common.—*P. Borrerianum* Spruce. In woods, frequent. —*P. sylvaticum* L. Abundant.—*P. undulatum* L. Very abundant.

Amblystegium serpens L. Common. — *A. fluviatile* Swartz. In moorland bogs.—*A. riparium* L.

Hypnum aduncum Hedw. Marshes.—*H. exannulatum* Grimb. Bogs, frequent.—*H. intermedium* Lindb. Bogs, frequent.—*H. revolvens* Swartz. Very abundant. — *H. fluitans* L. Moorland bogs, not uncommon. — *H. filicinum* L. Wet banks. — *H. commutatum* Hedw. Bogs, common.—*H. falcatum* Brid.—*H. hamulosum* B. & S. —*H. callichroum* Brid. — *H. cupressiforme* L. On rocks and trees, frequent.—Var. *lacunosum* Wils.—*H. resupinatum* Wils. On trees. —*H. patientiæ* Lindb.— *H. molluscum* Hedw. Abundant.—*H. palustre* L. Stones in streams, very common. — *H. eugyrium* Schp., var. *Mackaii* Schpr. Stones in waterfalls. — *H. ochraceum* Turn. Frequent.—*H. stellatum* Schreb. Not uncommon.—*H. cordifolium* Hedw. Bogs.—*H. sarmentosum* Wahl. Wet places, very abundant. —*H. cuspidatum* L. Common throughout the district.—*H. Schreberi* Ehrh. On banks in shady woods, abundant. — *H. purum* L. In shady woods, very frequent. — *H. stramineum* Dicks. In bogs, frequent.—*H. scorpioides* L. In bogs, abundant.

Hylocomium splendens Dill. On banks and shady woods, abundant, and frequently in fruit. — *H. brevirostrum* Ehrh. Woods, abundant.—*H. squarrosum* L. Common.—*H. loreum* L. Frequent in the woods.—*H. triquetrum* L. Abundant.

BOMBAX JENMANI Oliv. = B. CAROLINOIDES Donn.

By James Britten, F.L.S.

Bombax Carolinoides Donn, Hort. Cantab. ed. iv. 156 (1807) (fide *Index Kewensis*); ed. v. 166 (1809); Alex. Anderson ex Sims in Bot. Mag. t. 1412 (1811).

Carolinea minor Sims, Bot. Mag. t. 1412 (1811).

Pachira minor Hemsl. Bot. Biol. Centr. Am. i. 124 (1879).

Bombax Jenmani Oliv. in Ic. Pl. 1720 (1887).

The restoration of the earliest name for the plant of which the synonymy is here given was suggested by Prof. Oliver's description of *Bombax Jenmani*, in which he states that the capsule, not hitherto fully described, "is that of a typical *Bombax*." Mr. E. G. Baker agrees with me that a comparison of Jenman's Guiana plant (No. 2449), on which Prof. Oliver established his species, with type-specimens of *Carolinea minor* in Herb. Mus. Brit., leaves no doubt as to the identity of the two; and the earliest name for the plant must therefore be restored, whatever rule as to priority may be adopted.

The resemblance of the flowers to *Pachira*, to which Prof. Oliver refers,* had impressed Sims, and induced him to name it *Carolinea minor*—the name *Carolinea* being now abandoned in favour of the earlier *Pachira*. But Alexander Anderson, who knew the plant alive, called it *B. Carolinoidès*, and this name, first published by Donn, must stand. Sims's description may be cited:—

"We received this elegant shrub from Messrs. Loddiges & Sons, under the name of *Bombax Carolinoides*, an appellation given to it by Dr. Anderson, of the Botanic Garden at St. Vincent's, who was induced to refer it to that genus because its seeds are enveloped in a fine brown cottony substance. But it is so exact a representation in miniature of *Carolinea insignis*, the same truncated calyx, linear fleshy petals, and singularly branched filaments, that we cannot consent to separate it from that genus and refer it to *Bombax*, with the other species of which it has so much less affinity. . . *Carolinea minor*, according to Dr. Anderson, is a native of Guiana, growing on the borders of rivers, and forming a very elegant tree; but is not common even there. The fruit, he says, is about the size of that of *Bombax Ceiba*, is a woody capsule, one-celled, with five valves, and numerous kidney-shaped seeds disposed in five rows, and enveloped in fine brown cotton. Mr. Loddiges received the seed of this tree several years ago from Dr. Anderson, and has now several fine healthy-looking plants" (Bot. Mag. t. 1412). The date of its introduction by Anderson, according to Aiton (Hort. Kew. ed. 2, iv. 195), was 1798. We have in the British Museum two sheets from Anderson, sent by him to Banks and Lambert respectively: the Banksian sheet has a full description in Anderson's writing, beginning, "An genus novum? Flores Carolinae et semine Bombacis." These seem to be the only ones existing from Anderson in European herbaria; the description in DC. Prod. i. 478 is taken from Sims's figure and one of the Mexican drawings of Moçino and Sasse, which does not entirely agree with it, and Dr. K. Schumann (Fl. Bras. xii. 3, 225) says, "Quid sit *Pachira minor* Sims nescio." He suggests that it may be identical with his *B. Poissonianum*, but this can hardly be.

Two other names retained under *Pachira* in Mr. Jackson's Index must also disappear. *P. Barrigon* Seem. has been referred by Decaisne to *Bombax*, and is also entered by Mr. Jackson under that genus; "*P. longifolia* Hook. Bot. Mag. 4549," was a slip for *P. macrocarpa*, under which name the species is (*l. c.*) described, and which (as Mr. Jackson notes) first appeared in Walpers Repert. i. 329.

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* "The plant is interesting as entirely *Pachira*, almost the common *P. aquatica* Aubl., in appearance of the flower, while the capsule is that of a typical *Bombax*."—Oliv. *l. c.*

NOTES ON RECENTLY PUBLISHED DESMIDIEÆ.

By W. West, F.L.S., and G. S. West, A.R.C.S.

Sphærozosma Goebelii Racib. (*Flora*, 1895, 1, p. 32, t. iii. u. iv. fig. 5). This is certainly only *Sphærozosma rectangulare* Wolle. Wolle's figures and description (*Desm. U. S.* 31, pl. xlix. fig. 9) are very bad, but specimens obtained in material received from him prove the two to be identical. Raciborski's figure is also not very good. An accurate description and figures are given in our paper on N. American *Desmidieæ*, which has been in the press for some time.

Micrasterias papillifera Bréb. A variety has been described by Schmidle (*Oesterr. Bot. Zeitsch.* 1896, 23) as var. *verrucosa*, n. var. (cum fig. zylogr.). We have met with many of these verrucose forms of *Micrasterias papillifera* from many localities, and the curious character of the membrane is due to the age of the cells, as in the case of *M. Jenneri* Ralfs. Very often one semicell is typical and the other verrucose.

Euastrum subcuneatum Schmidle. This is described and figured in the same paper (p. 21); it is not an *Euastrum*, and certainly does not resemble *E. cuneatum* Jenner; it is probably a form of *Cosmarium plicatum* Reinsch, with two tubercles within the apex of each semicell.

E. Boldtii Schmidle (*l. c.* p. 21). This is only a frequent form of *E. denticulatum* (Kirchn.) Gay, as first mentioned by Boldt (*Desm. Grönl.* p. 8, t. 1, fig. 9).

Cosmarium Quasillus Lund. var. alpinum Schmidle (*Oesterr. Bot. Zeitschr.* 1895, 459, t. xvi. fig. 1). This seems to us much nearer a form of *C. tetraophthalmum* Bréb. var. *Lundellii* Wittr. than to any form of *C. Quasillus* Lund., which latter it does not appear to resemble.

C. Osteri Schmidle (*l. c.* p. 458, t. xv. fig. 32). This is certainly a form of *C. vogesiacum* Lemaire (*Desm. Vosges*, 1883, p. 20, pl. 1, fig. 2), with rather more granules and a broader isthmus, and we therefore refer it to *C. vogesiacum* Lemaire as var. Osteri (Schmidle) nob. If the vertical view and the front view of the figures given by Lemaire (*l. c.*) be compared, it is evident that if the figure of the former is correct, that of the latter should have the papillæ at the apex much less pronounced.

C. ornatissimum Schmidle (*Hedwigia*, 1894, p. 90, t. vi. fig. 12). This seems to be but a form of *C. nasutum* Nordst. (*Desm. Spetsberg.* 1872, p. 33, t. vii. fig. 17).

C. Pseudoregnesii W. & G. S. West in *Trans. Linn. Soc.*, 1895, 2nd Ser. v. p. 59, pl. vi. figs. 42, 43. *C. Novæ-Semliæ* Wille var. *polonicum* Eichler & Gutw. *De Nonn. Spec. Algar. Nov.*, Krakow, 1894, p. 170, t. v. fig. 27. *C. Regnesii* Reinsch var. *montanum* Schmidle (*Hedwigia*, 1895, p. 74, t. i. fig. 9; *Oesterr. Bot. Zeitschr.* 1895, 389. The variety *montanum* of *C. Regnesii* described by Schmidle is stated by him (*in litt.*) to be precisely the same as

C. Pseudoregnesii. As described in the paper cited, the latter is quite distinct from *C. Regnesii* Reinsch, which was there figured with it for comparison. Reasons were given (*l. c.* p. 90, footnote) why "*polonicum*" could not be adopted as the specific name. If the figure given by Schmidle for *C. Regnesii* var. *montanum* in *Hedwigia* really is *C. Pseudoregnesii*, it is a very bad one. Prof. Schmidle has published a second figure (*l. c.* t. xv. fig. 11) of his var. *montanum*. and this agrees with *C. Pseudoregnesii*, but if the *original* figure of Schmidle's is accurate, then his variety is not *C. Pseudoregnesii*, and for this reason mention of his variety was not made in the footnote above referred to.

Xanthidium alpinum Schmidle (*l. c.* p. 356, t. xv. fig. 9). This is identical in all respects with *Sphærozosma excavatum* Ralfs var. *Novæ-Semliæ* Wille (*Öfvers. af Kongl. Vetensk.-Akad. Forhandl.* xxxvi. p. 62, t. xiii. fig. 70 (1879)). Perhaps this is a *Tetraëdon*, and not a Desmid.

Staurastrum dejectum Bréb. forma Borge (*Bihang till K. Svensk. vet.-akad. Handl.* xxi. afd. 3, p. 24, fig. 14). These are forms of *S. glabrum* (Ehrnb.) Ralfs.

S. Dickiei Ralfs var. parallelum Borge (*l. c.* p. 23, fig. 13) non Nordst. (*Freshw. Alg. New Zeal. & Austr.* p. 39, pl. iv. fig. 15). The examples figured by Borge are in our opinion forms of *S. lanceolatum* Arch.

S. subavicula West (*Journ. Roy. Microscop. Soc.* 1894, p. 12). *S. arcuatum* Nordst. subsp. *subavicula* West, *Journ. R. Microscop. Soc.* 1892, p. 732, pl. ix. fig. 25. *S. arcuatum* Nordst. var. *vasta* Schmidle, *Hedwigia*, xxxiii. 1894, p. 94, t. vi. fig. 7. *S. vastum* Schmidle, *Oesterr. Bot. Zeitschr.* 1896, 59. The species described by Schmidle is precisely the same as the one we described from Brandreth, in the Lake District, in 1892.

S. sparese-aculeatum Schmidle (*l. c.* p. 60, tab. xvi. fig. 20). Is this not a small form of *S. Ravenelii* Wood? It seems to agree well with many specimens of the latter species we have examined from the United States.

S. polytrichum Perty var. alpinum Schmidle (*Hedwigia*, 1895, p. 81, taf. 1, fig. 20). This is a fairly typical specimen of *S. teliferum* Ralfs. British specimens of *S. teliferum* do not always agree with Ralfs' figures in having the spines only at the angles, the majority of examples having a few spines between the angles. The angles of *S. teliferum* are always broadly rounded (as figured by Schmidle); those of *S. polytrichum* are acutely rounded.

S. trapezicum Boldt. var. campylospinosum Schmidle (*l. c.* fig. 25). This is only a form of *S. pyramidatum* West, a very frequent species in upland districts.

S. megalonotum Nordst. forma *hastata* (Lütkemuller) Schmidle (*Oesterr. Bot. Zeitschr.* 1896, 72, t. xvii. figs. 6 and 7). Fig. 7 is but a form of *S. spongiosum* Bréb.

S. alternans Bréb. var. coronatum Schmidle (*Hedwigia*, 1895, p. 82, fig. 24). This does not belong to *S. alternans*, but is a variety of *S. punctulatum* Bréb., and we therefore call it *S. punctulatum* Bréb. var. CORONATUM (Schmidle) nob. It is a common thing for the angles of the two semicells in both *S. punctulatum* and *S. pygmæum* to alternate with each other, and not uncommonly the angles of the two semicells in *S. alternans* are opposite. The figures of *S. alternans* and *S. dilatatum* in Ralfs' *British Desmidieæ* are amongst the most beautiful and most accurate in the whole book, and are exactly like thousands of specimens we have seen from all over the British Isles.

S. BICORNE Hauptfl.? Borge (*Bihang till K. Sv. vet.-akad. handl.* Band 21, afd. iii. p. 24, fig. 15). This is *S. Pseudosebaldi* Wille, **Duacense* West (*Journ. Linn. Soc.* (Bot.) xxix. p. 184, t. xxiv. fig. 1 (1892).

S. PROTRACTUM Racib. (*Flora*, lxxxi. p. 34, taf. iii. u. iv. fig. 14 (1895)). This seems to us very like a large form of *S. lævispinum* Bissett.

THE DISPLACEMENT OF SPECIES IN NEW ZEALAND.

By T. KIRK, F.L.S.*

IN the absence of civilization, the indigenous fauna or flora of any country is liable to little or no change from external causes. Aërial and marine currents may occasionally bring spores or even seeds of exotic plants; more rarely, insects or birds may be introduced by gales of unusual violence; migratory or aquatic birds may introduce the eggs of insects, or even molluscs, as well as seeds and fragments of terrestrial or lacustrine plants which have become attached to their feathers; and certain terrestrial or fluviatile molluscs may be introduced by drifted logs; but after a certain time any increase in the number of species by agencies of this kind must become extremely rare, and can occur only at distant intervals. It may therefore be concluded that in all probability the constituents of the fauna and flora of this colony, with possibly the exception of the larger Ratite birds, were in much the same condition when they were first seen by Cook and Vancouver as they had been for many previous centuries. But with the advent of civilization vast and far-reaching changes speedily take place: axe and fire rapidly alter the face of the country; portions of the forest are felled, burnt off, and replaced by grass—a change which of itself involves a multitude of other changes; the unfelled portions of the forest are laid open to violent winds, so that the surface-rooting trees are blown over in large numbers, while the increasing dryness of the atmosphere acts unfavourably on the undergrowth, which is still further injured by the depredations of cattle; gradually the plants less able to resist changed conditions disappear, and with them many insects, lizards, and birds which are unable to obtain their usual food in the new environment.

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* Extracted from his Presidential Address to the Wellington Philosophical Society, 3rd July, 1895.

But the space occupied by the displaced plants is not long allowed to remain unoccupied. An army of encroaching weeds speedily takes possession of the vacancy: thistles, star-thistles, docks, groundsels, brambles, briars, and a hundred other unattractive invaders make their appearance, and increase the severity of the struggle for the survivors of the indigenous flora. From sea-level to the highest points reached by the miner or shepherd, from the North Cape to the Antarctic Islands, their hosts press forward, ever seizing some new position, just as on a larger scale they have long since occupied the vicinity of the chief ports on the great lines of ocean travel from Britain to the Cape of Good Hope, from Yokohama to Cape Horn, so that wherever the traveller lands from his floating home he finds himself surrounded by familiar plants which have in a greater or lesser degree amalgamated with the vegetation of the country which they have invaded, and which to a large extent they will ultimately overcome.

And, most unhappily, this invasion is not restricted to phanerogamic plants. Numbers of injurious fungi accompany their hosts. Rust, mildew, and bunt blight the hopes of the wheat-grower at the moment of fruition. The grazier too often sees his pastures rendered useless by the ravages of smut and ergot; while the cultivators of edible fruits and vegetables can point to special enemies of almost every kind of plant grown for its value as an article of food. Nor is this all. Numbers of species, almost equally insidious in their development, are parasitic, not only on members of the indigenous flora, but on the naturalized weeds themselves; so that the circle of infection is constantly widening, while the scientific knowledge and practical skill of the cultivator are taxed to the utmost limit.

Further, the invading army of plants has brought in its train a still more dangerous host of animals; and as in the vegetable kingdom the most injurious forms were found amongst the less highly organized kinds, so in the animal kingdom the invaders whose agency is most dreaded are members of the Invertebrata: the mussel scale, the fluted scale, the black scale, and many others, together with numerous species of plant-lice, will occur to you as belonging to lowly-developed forms of Insecta. Higher in the scale, the Hessian fly, wire-worm, turnip-fly, and others; while numerous species of earth-worms, molluscs, birds, and even mammals, whether introduced purposely or accidentally, affect alike both fauna and flora.

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Natural Replacement amongst Plants.

Before considering the injuries sustained by the flora from the numerous naturalized plants, it seems desirable to describe a kind of natural replacement which may be observed to a greater or less extent in nearly all forest districts. On forest or scrub being felled and burnt off, unless grass-seed is sown immediately, certain species of fungi or of mosses make their appearance, *Funaria connivens* being perhaps the most frequent; next, the bracken; more rarely, *Gleichenia circinata*. The latter, however, is soon overpowered by the former, and the entire area is quickly covered with a luxuriant growth of "aruhe," thus affording a suggestion as to the way in which the wide fern-clad "pakihis" were originally formed and the timber replaced by fern. But a more striking form of replacement is often to be witnessed: a dense growth of the makomako (*Aristotelia racemosa*) takes the place of the pines and broad-leaved trees which have fallen under the axe. Not infrequently the makomako forms a kind of coppice, the dense growth killing off most of the branches, so that the plants form long, straight rods; the stronger individuals, outgrowing the others, develop branches, and, being thus enabled to assimilate a larger amount of nutritive matter, become more robust, and, gaining complete mastery, prevent the weaker from obtaining their fair portion of air and light, so that at length they die out, leaving the more vigorous specimens to form a makomako grove; these repeat the process amongst themselves, the weakest continually going to the wall, until the undergrowth becomes more or less open, when various shrubs and trees make their appearance, and a new piece of mixed forest replaces the makomako, which has become comparatively rare. In many parts of the Kaipara the first tree to make its appearance after a clearing has been formed is the fuchsia (*F. excorticata*), which often occurs in vast abundance, to the exclusion of almost all other plants; it grows less rapidly, however, than the makomako, and is more speedily interspersed with other shrubs and trees. Another plant which often makes its appearance in large quantities after clearing is the poroporo (*Solanum aviculare*), which is less permanent than either of the preceding. In 1864, owing to the Maoris having fired upon our troops along the line of the Great South Road, between Drury and the Waikato, the heavy forest on each side of the road was felled for a width of about 2 chains and burnt off, when a remarkably strong growth of poroporo sprang up, and for many miles both sides of the road were bordered with this plant, which in its turn afforded temporary shelter for many shrubs and young trees, amongst which the totara was remarkably frequent. On the west coast of the South Island, much of the lowland forest when burnt off is temporarily replaced by a robust growth of a large native groundsel (*Erechtites prenanthoides*), which often attains the height of 5 ft., most of it, however, disappearing before the close of the third year, when its place is taken by fern or, more rarely, by shrubs and trees. When the road from Nelson to the Buller was formed through the Hope Valley, about 1870, the burnt area on each side of the road-line was thickly dotted with the rare pine *Podocarpus acutifolius*, although very few specimens of the plant were to be seen in the immediate vicinity. It is, however, already overgrown by larger trees to a considerable extent, and affords an instance of a phenomenon often observed by foresters in Europe, where certain plants, as *Pyrola minor* and *P. rotundifolia*, make their appearance in forests which have recently been thinned, and, after increasing for three or four years, gradually die out, to reappear after the next periodical thinning. Much, however, has yet to be learned with regard to phenomena of this kind in New Zealand.

Destruction of Kauri Forests.

It is now proposed to trace the principal lines along which injury has been done to the flora, and at the outset to glance at the agency of man. So far as the necessary results of clearing land for cultivation are concerned, they are sufficiently obvious, and have already been mentioned. But they are greatly aggravated and intensified when attention is attracted to the economic value of certain timbers, and the forest is felled at the demand of commerce: the giant kauris, whose branches were waving high in the air long before the civilization of the West was called into existence, are thrown down, and these grand trees, the growth of many centuries, are in a brief space made available for the thousand requirements of every-day life. But before this has been done rolling-roads have been formed, or tramways laid, involving the destruction of a vast amount of arboreal growth, of elegant flowering shrubs, of fragrant orchids, of delicate herbaceous plants, and of charming ferns, which never again can beautify that scene; for directly the last log has been removed the intelligent bush-man, with a recklessness which would be reprobated by a savage, applies a match to the dead branches, for the mere pleasure of seeing the blaze, and not only destroys thousands of promising young trees, but effectually prevents all possibility of renewal, since the surface-soil, being charged with resin, becomes so intensely heated that all fallen seeds are destroyed, and the site of the forest becomes a desolation, which, after a short interval, is partially covered with an unattractive weedy growth, the seeds of which have been introduced in the wool or hair of animals, or the wings of birds, or blown by aërial currents, after a time to be slightly relieved by patches of bush-lawyer (*Rubus australis*) or other uninviting plants. There is probably no greater scene of desolation in the colony than the sites of the large kauri forests in the Kaipara district and on the Cape Colville peninsula. In cases like this the direct and intentional agency of man compresses into a brief space a far greater amount of destruction than would be effected by natural agencies during many centuries.

Injury caused by Cattle.

Whenever cattle gain access to the forest they browse upon the young shoots, while they consolidate the soil, thus preventing the germination of seeds and consequent renewal; this renders the atmosphere dry, and eventually leads to the destruction of the older trees, although no actual clearing may have been made by man.

Next to man, however, the chief agents in this destructive work are the sheep and the rabbits. Some districts are eaten almost bare by these close feeders, little being left except the tough bases of the silver-tussock (*Poa cæspitosa*) and the wiry, ligneous stems of *Muhlenbeckia* and similar plants; even the woolly leaves of some species of *Celmisia* are often closely cropped, the result being that the more delicate plants are all but extirpated over large areas.

In a few localities goats have been equally destructive. I have been informed that the tainui (*Pomaderris apetala*) has been completely destroyed at Kawhia, where it was formerly abundant, and is now restricted to the south head of the Mokau River and the Chatham Islands.

Injury caused by Rats.

Some plants formerly plentiful have been to a large extent destroyed by the pig and the rat, as the curious orchid, *Gastrodia Cunninghamii*, the tubers of which are highly nutritious. This plant has become very rare in districts where the black rat is plentiful. On one occasion, in 1874, I found three remarkably fine specimens, quite 2 ft. in height, with tubers 6 in. or 7 in. in length, and placed them in what seemed a safe place in a hut at Omaha, but during the night they were carried off by the rodents, Both the pig and the grey rat feed upon the fleshy roots of the larger *Umbelliferæ*.

Injury caused by Insects.

A small native beetle, which I have not been able to identify, has greatly reduced many species of *Celmisia* and other *Compositæ* by depositing its eggs on the disc florets, where they quickly enter the larval state, and destroy the carpel before it reaches maturity. The great increase of this insect during recent years is doubtless caused by the frequent burning of the surface vegetation, and consequent destruction of the lizards and predatory insects which kept the beetle in check. Several species of Diptera which are equally destructive doubtless owe their rapid increase of late years to the same cause.

Displacement by Introduced Plants.

In many instances a comparatively few species of naturalized plants have taken possession of sea-beaches, completely displacing the original vegetation by their more vigorous growth and their vast numbers—simply crowding it out by depriving it of air and light, and to a large extent absorbing its nourishment. This may be seen, for instance, south of the township of Kaikoura, where a broad stretch of land at the water-margin is wholly given up to such weedy plants as the common brome-grass (*Bromus sterilis*), docks (*Rumex obtusifolius*, *R. crispus*, &c.), fleabane (*Erigeron canadensis*), catchfly (*Silene anglica*), Yorkshire-fog (*Holcus lanatus*), and others, perchance intermixed with one or two native plants of similar habit. Here the displacement is almost complete, the original littoral vegetation having been driven to a few peculiarly favoured spots, where it maintains a somewhat precarious existence.

The displacement of the New Zealand flax (*Phormium tenax*), the coarse sedge known as toe-toe-whatu-manu (*Cyperus ustulatus*), and the common fern (*Pteris esculenta*), by European grasses and clovers is so striking that it has arrested the attention of the natives, and, indeed, it is calculated to attract the notice of even a casual observer, for the indigenous species mentioned are so robust that the mere idea of their being overcome in the struggle for existence by such plants as clovers and grasses seems almost absurd:

but the fact remains. Seeds of rye-grass, meadow-grass, white or red clover, &c., germinate by the side of the coarse-growing toitoi, and gradually abstract the moisture which it has been enjoying undisturbed; the growth of the sedge becomes less vigorous, while that of the interlopers is more robust. The result would not be in doubt were the plants now left undisturbed, but an overpowering force comes to the help of the invaders—the rich grass attracts cattle and horses to graze upon it; this increases the vigour of the grass, while the native plants have to contend against the consolidation of the soil caused by the trampling of heavy stock; this further invigorates the interlopers, and enables them to continually extend their area by giving off new shoots from the base, and occasionally by producing seed. As their growth increases the vigour of the toitoi perceptibly diminishes, and its ultimate extinction is certain, although the process may occupy several years. The occasional replacement of manuka (*Leptospermum scoparium*) and other shrubs by grasses is still more striking. Sir George Grey drew my attention to this fact on my first visit to the Kawau, in 1864, where the naturalized *Sporobolus indicus* was spreading amongst manuka from 5 ft. to 8 ft. in height, forming a sward which, notwithstanding the coarse character of the herbage, was closely cropped by stock, to the benefit of the grass and injury of the shrub. But even this is less surprising than an instance of a similar kind at the Bay of Islands, where a delicate and slender naturalized love-grass (*Eragrostis Brownii*) is exerting the same influence on a large scale. Introduced grasses exhibit similar action upon many native grasses in all parts of the colony and at all elevations. In the Upper Waimakariri, *Triodia exigua* often forms a compact and extensive sward, which is usually able to resist aggression on the part of its indigenous allies; but if a single grain of rye-grass (*Lolium perenne*) or meadow-grass (*Poa pratensis*) falls amongst it and germinates, the continuity of the sward is speedily interrupted, and a process of disintegration sets in which ultimately destroys the whole, or reduces it to small tufts or patches. The same result is often exhibited at the expense of more robust plants. The gradual replacement of the spaniard (*Aciphylla Colensoi*) by self-sown pasturage plants is most remarkable. It seems next to impossible that the large rigid bayonet-like leaf-segments which surround the base of the flower-stem in this strange plant should be injured by a growth of soft herbs, however compact; yet, so it is: dense masses of the spaniard, actually impenetrable to stock of any kind, are destroyed by this simple agency. When once its vigour is reduced the ultimate destruction of the spaniard is simply a matter of time. The common spear-grass (*A. squarrosa*) is often displaced in the same way.

Amalgamation of Native and Introduced Plants.

But there is another aspect to the case; for, however remarkable it may seem after the statements that have just been made, certain slender native grasses, of great value on account of their nutritive qualities, are able to resist the invaders, and ultimately become amalgamated with them, to the great benefit of the stock-grower. *Microlæna stipoides* and *Danthonia pilosa* are fair examples of this group.

Replacement by Epacrids.

One of the most interesting instances of replacement that has been observed up to this time is now in progress on the Te Karaka flats, between Papatoitoi and Drury, in the Auckland District. These flats for many miles are clothed with a dense, but not always luxuriant, growth of manuka, manuka-raunui (*Leptospermum ericoides, Dracophyllum Urvillianum*), mingimingi (*Cyathodes acerosa*), &c., the manuka being the prevailing plant. Rather more than forty years ago the late Dr. Sinclair and General Bolton discovered the beautiful *Epacris purpurascens*, a native of New South Wales, in this locality, when it was rightly considered by Sir Joseph Hooker to have been introduced.* Fifteen years elapsed before it was seen by other botanists, when it was found in several places on the flats, presenting the aspect of a truly indigenous plant, and attaining the height of from 2 ft. to 6 ft. or more. From the great quantity in which it was found I was erroneously led to consider it indigenous, and this conclusion has been generally accepted. More recently † it has been observed in localities fully twenty miles distant. In 1875 three plants of another species (*E. microphylla*) were discovered by A. T. Urquhart, Esq., in the same district. This species is also a native of New South Wales, but has a wider range, extending to Queensland, Victoria, and Tasmania. In three years the plant increased to such an extent that it formed "a dense mass 60 yards in circumference, the intermediate vegetation—*Leptospermum*, *Pomaderris*, and *Pteris*—being almost completely destroyed." ‡ In 1887 I had the pleasure of visiting the habitat under the guidance of Mr. Urquhart, and found that not only had the area occupied by the plant been greatly extended, but that colonies had been formed at a greater or less distance from the original centre, and would in their turn form new centres of distribution. Mr. Urquhart also pointed out a very old specimen of another species, *E. pulchella*, also a native of New South Wales: this was surrounded by numbers of young plants, which were producing perfect seed, and increasing at a rapid rate. My friend informed me that he had discovered a colony of this species at some distance from the parent plant, but, unfortunately, I had not time to visit it. These three species were alike extending their area mainly in the direction of the prevailing winds, and would, I am convinced, be able practically to replace the indigenous vegetation over the entire area if not interfered with by man. This instance of replacement is replete with interest, as it is almost the only case in which there is clear evidence of the seeds of phanerogamic plants having been carried by aërial currents over a distance of from 1200 to 1400 miles and becoming established in a new country.

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* Fl. N. Z. ii. 321, 334.

† Trans. N. Z. Inst. ii. (1869), 107.

‡ Trans. N. Z. Inst. xviii. (1881), 364.

Displacement and Increase.

The blue-gum (*Eucalyptus Globulus*[*]) in some localities shows itself able to compete with the indigenous vegetation under special circumstances. Seedlings germinating amongst manuka 4 ft. or 5 ft. in height will speedily overtop it. In several localities self-sown plants are found by thousands, and, as a second generation of naturalized plants is already to be found, there can be no doubt that if not interfered with it would entirely alter the aspect of large portions of the colony. *E. piperita* and *E. rostrata* appear to have the same power of adapting themselves to new situations, although perhaps not to an equal extent.

The brush-wattle (*Albizzia lophantha*), a native of Western Australia, is able to destroy the strongest vegetation in open manuka country, as may be seen in numerous localities; while the tan-wattle (*Acacia decurrens*) and the silver-wattle (*A. dealbata*), although much slower, are equally effective in the northern districts. Another Australian plant, *Hakea acicularis*,[†] according to Mr. Cheeseman, "has established itself over several miles of open manuka country at the foot of the Waitakerei Ranges, and is increasing fast." Cobbett's locust-tree (*Robinia Pseudacacia*) forms large groves in the Waikato and other localities; its lofty stature and numerous suckers effectually prevent the growth of other vegetation. The well-known furze (*Ulex europæus*), by its dense habit, has killed tauhinu (*Pomaderris phylicifolia*), manuka, &c., over large areas, and is continually extending, whilst its near relative, the broom (*Cytisus scoparius*), is no less troublesome. The injury to pasturage caused by the sweetbriar (*Rosa rubiginosa*) is unhappily too well known to need special mention; but few are equally familiar with its power of overcoming manuka and other shrubs of similar habit. The dog-rose (*R. canina*) exerts the same influence to a less extent in several districts of the South Island; while various forms of the European blackberry (*Rubus fruticosus*), &c., by overgrowing their unfortunate competitors, deprive them of light and air while absorbing their nourishment.

The tutsan (*Hypericum Androsæmum*), although little more than a strong-growing herb, less robust than any of the plants previously mentioned, has become abundant in certain districts, and is able to compete successfully with manuka, karamu, hange-hange, and other shrubs of stronger growth. Its seeds appear to be disseminated by birds.

Two trees may be mentioned here, although they do not perhaps displace the indigenous vegetation to any great extent. They never perfect seeds or give off suckers, yet they have become self-diffused along the margins of rivers and in similar situations to such an extent as to impart a distinct character to the landscape in certain districts. They are the weeping-willow (*Salix babylonica*), a native of Northern China, and the crack-willow (*S. fragilis*), of Northern

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[*] Trans. N. Z. Inst. xvi. (1883), 383.

[†] Ibid. xv. (1882), 291.

Europe. Twigs of these trees are easily detached, and are floated by the river to new situations, where they quickly take root and develop with rapidity, so that in certain situations navigation is impeded.

Introduced Plants on Broken Soil.

Introduced plants compete with indigenous species for the possession of any newly-loosened surface, and especially for waste land. The margins of newly-formed roads are speedily clothed with a dense growth of sheep's-cress, docks, thistles, Yorkshire-fog, and many others, mixed with the native piripiri (*Acæna sanguisorbæ*), toad-grass (*Juncus bufonius*), *Danthonia semi-annularis*, and when neglected form splendid nurseries for injurious insects and fungi. Crumbling places on hillsides in many localities are quickly covered with a strong and permanent growth of the blessed-thistle (*Silybum Marianum*), which distributes vast quantities of seeds, and overcomes indigenous and introduced plants alike, forming continuous masses of variegated foliage in the early spring, but presenting a ragged and untidy appearance during the autumn and winter months. The common spear-thistle (*Cnicus lanceolatus*) furnishes a striking example of the ability of a plant to seize upon situations suitable for its growth; in many districts immediately after the bush is burnt off the entire area is overrun by this rapacious invader, which exhibits a dense luxuriant growth often 4 ft. to 5 ft. high, preventing the growth of grass, and forming an almost impenetrable mass. The growth becomes less luxuriant during the second season, so that the grass is able to make headway, and by the end of the fourth season only a few old thistles have retained sufficient vigour to reassert themselves. The so-called Californian thistle (*C. arvensis*) is the only naturalized species capable of injuring pasturage to any serious extent, and, unhappily, it is often the cause of serious loss to the pastoralist and agriculturist. The Gundagai thistle, as it is called in New Zealand (*Carduus pycnocephalus*), flourishes on newly-disturbed soil in many localities, but is comparatively rare on grass-land.

Whenever the finely-comminuted basaltic scoria of the Auckland isthmus is disturbed, a luxuriant crop, chiefly of naturalized plants, speedily makes its appearance, but amongst them one of the most abundant is the indigenous *Chenopodium carinatum*, although not a specimen may have been seen in the vicinity until the surface was disturbed. After the second year the number of plants is greatly diminished, and during the fourth year only solitary specimens are to be found. A similar instance has been observed at Cape Whanbrow, near Oamaru. Whenever the fine silt which covers the surface is disturbed, *Lepidium tenuicaule* and the indigenous form of *Atriplex patula* make their appearance in abundance, although usually both plants are only to be found in small quantity.

Naturalized Aquatic Plants.

The increase of the watercress (*Nasturtium amphibium* [*officinale*]) in streams and watery places is phenomenal, and attracts the attention of new arrivals on account of the excessive luxuriance and robust growth of the herb, which is not infrequently from 3 ft. to 5 ft. in height above the water-level, and often impedes the passage of boats. This luxuriance is chiefly due to the mildness of the climate, and has a singular parallel in one locality in England. At the Wyken Colliery the water pumped up from a great depth is of a high temperature, and flows into a stream which expands into a large, shallow pond. As the pond is never frozen, even in the severest weather, the watercress is almost as luxuriant as in New Zealand. The Canadian water-weed (*Anacharis Alsinastrum*) simply chokes the River Avon at Christchurch, and has been carried by aquatic birds to other streams in Canterbury and Otago, but is rare in the North Island, being restricted, so far as known to me, to a river near Mongonui, and another in the Bay of Plenty. It is of considerable interest, owing to its being the only submerged aquatic plant that has become naturalized in the colony.

Naturalized Fungi.

Several naturalized fungi are highly injurious to the indigenous vegetation, as the ergot (*Claviceps purpurea*), which infests numerous native grasses; the clematis cluster-cup (*Æcidium clematidis*) frequently infests *Clematis Colensoi* and other species almost to the point of destruction, the stem, petiole, and even parts of the flower becoming thickened and distorted under its attacks: but the limits of this address will not permit me to enter into detail.

Rate of Increase.

As the number of species more or less completely naturalized in the colony is upwards of five hundred, it becomes a question of some interest whether additions will be made to the catalogue at the same rate during the next half-century as in the past; if so, the number of species of naturalized and indigenous Phanerogams would be about equal, and many of the latter would be crowded out of the field. A satisfactory answer may, I think, be given.

The first catalogue of naturalized plants was published in the original *Flora of New Zealand*, ii. 321 (1855). It comprises sixty-one species, seventeen of which must be excluded as erroneous, leaving forty-four naturalized species. The second list, published in the *Handbook of the New Zealand Flora*, 757 (1867), contains 171, from which twenty-one species must be deducted as included on insufficient grounds, leaving 150 species naturalized. A list prepared by the present writer was published in *Transactions of the New Zealand Institute*, ii. 131 (1869); it embodied all that was then known on the subject, and enumerated 292 species, a summary of which, given at p. 146, showed forty-one species erroneously included, or of uncertain position, and 251 species truly naturalized. During the three following years I added fifty-three species to the list, making a total of 304 species known to me at the date of my ceasing to reside in Auckland. In 1882 Mr. Cheeseman published a list of the naturalized plants of the Auckland district, in which he raised the total to 382; but this does not include a few species seen by myself, and still unpublished. At the present time the number of species is certainly over five hundred, as already stated. Making all fair allowance for the imperfection of the records for 1855 and 1869, it will be seen that naturalized species have increased with great rapidity during the last fifty years. But it is not probable that this rate can be maintained; the number of encroaching species suitable for a given habitat, after all, must be limited, and it may well be that the limit for New Zealand, so far as introductions from European countries are concerned, is very nearly reached. As bearing upon this point, it may be remarked that, as many of the naturalized plants of different countries are migrants from a common centre, a large proportion must necessarily be identical; for instance, out of 243 species enumerated by Mr. C. Moore, F.L.S., as naturalized in New South Wales, fully three-fourths are naturalized in New Zealand also; the remainder, consisting chiefly of plants from warmer countries, are not capable of becoming naturalized here. Again, out of 103 species of plants recently introduced with ballast from Buenos Ayres, eighty-six were already naturalized here.

The distribution of naturalized plants in the colony follows to a very great extent the same lines as those of the indigenous flora: the number of species decreases rapidly southward. Upwards of four hundred and twenty species are found in the Auckland District, but no other district in the colony contains so large a number; less than three hundred species would be found in the Wellington District. It must, however, be remembered that the climate of Auckland is much more favourable to the naturalization of plants from warm temperate climates than that of any other part of the colony. A singular illustration of this has been recently given. A large quantity of ballast taken on board at Buenos Ayres was discharged at Wellington from a vessel loading for Europe. Over a hundred species of plants made their appearance on the ballast before the close of the second summer, the great majority being plants already naturalized in the Auckland District; twenty-seven species, however, had not previously been observed in Wellington, and of these seventeen species had not previously been seen in any part of the colony. In all probability not more than two of these will become naturalized—most likely only one. But had the ballast been deposited on the light scoria soil of the Auckland isthmus instead of on the stiff Wellington clay, it is absolutely certain that in the absence of interference fully one-third would have become established—probably more. I will only add, as an additional reason for not expecting so large an increase in the number of introductions as formerly, that during the last fifteen years great improvements have been made in cleaning garden-seeds, agricultural seeds, and cereals, which will not only tend to reduce the number of species likely to be introduced in the future, but to prevent the yearly importation of certain species which at present are but partially naturalized. Chiefly from this cause certain species, such as *Fumaria officinalis*, *Lepidium campestre*, *Papaver Rhœas*, *Githago segetum*, *Scandix Pecten-veneris*, are less plentiful in many districts than they were twenty years ago.

POSSIBLE EXTINCTION OF INDIGENOUS SPECIES.

It is scarcely to be feared that any large number of indigenous species will become exterminated unless under special conditions not yet realized. It has been shown that the aspect of vegetation over large areas may be changed by displacement, but it does not follow that this would involve the absolute extinction of many, or even of any, indigenous species. Displacement rarely passes into absolute replacement; after it has reached a certain stage the invaders lose a portion of their vigour, and become less encroaching; a portion of the indigenous vegetation becomes gradually inured to light and air, the severity of the struggle becomes less intense, and a gradual amalgamation takes place between the invaders and the invaded, which of itself facilitates the preservation of many of the more delicate kinds, while those less fitted to hold their place in the contest become restricted to those habitats which are of a peculiarly favourable character. The danger of extinction is greatest for those endemic species which are so remarkably local; for instance, *Epilobium brevipes*, restricted to a solitary habitat on Mount Torlesse, and another in the Awatere, may at any time be destroyed by an unusually hungry rabbit or sheep, and one of the most interesting plants in the colony blotted out of existence. *Clianthus puniceus* is already restricted to one or two islets where sheep are unknown, and owes its preservation in a wild state to their absence. *Logania depressa*, *Myrsine montana*, and *Abrotanella pusilla* are in exactly the same position as *Epilobium brevipes*. The list might be increased, but it is needless to mention others.

NEW MARINE ALGÆ.

BY E. M. HOLMES, F.L.S.

SINCE the publication in the *Annals of Botany* (viii. 336–342) of some new Marine Algæ from Natal, I have had the opportunity of further examining some of the material sent by Dr. Becker, and have found two other new species and the fructification of a third, all of which can now be referred to the proper genus.

1. **Ectoclinium Kowiense**, n. sp., fronde membranacea plana, lineari, pluries tri-dichotoma flabellato-subcorymbosa, ramis axillis rotundatis, superioribus subæqualibus divaricato-patentibus, terminalibus vage dentatis, subdivergentibus.

Hab. The Kowie, *Dr. H. Becker.*

This species differs chiefly from the Australian species *E. dentatum* in the absence of a visible nerve, and in the uniform width and thickness of the divisions of the frond, which are narrower only at the tips. The remarkably rounded axils and spreading branches give the aspect rather of a very narrow *Rhodophyllis* than that of an *Ectoclinium*, but the nemathecioid sorus of tetraspores at once distinguishes the plant from the genus *Rhodo-*

phyllis. The colour is a dark purplish red, or in older plants blackish red. The height in my specimen does not exceed 3 in.

2. **Ptilophora Beckeri**, n. sp., radice fibrosa, fronde 1–1½-pedali, mox supra basin umbellatim divisa, ramis elongatis bis terve irregulariter pinnatis; costa tenui, infra apicem evanescente percurso; pinnulis ultimis in statu juniori obtuse dentatis, in adultiori dentibus in ligulis angustissimis ad semi-unciam longis productis, cystocarpiis ovalibus in apice ligulorum evolutis.

Hab. The Kowie, *Dr. H. Becker*, July, 1892.

This plant was received from Dr. Becker under the name of *Ptilophora prolifera*, Harv. It bears a considerable resemblance to *Pterocladia lucida*, and was for some time passed over by me as that plant. On examining it more closely, I noticed the cystocarps were bilocular, and that the structure of the frond consisted of four layers of cells and a central fibrous layer, followed by a layer of rounded cells, then a thinner layer of fibrous cells, and finally a layer of minute cortical cells, all exactly similar to those occurring in *P. prolifera*. But from that species it differs entirely in the absence of squamose proliferations on the surface of the frond, and in the slender but more pronounced nerve in the ramuli. It comes very near to a species described by Dr. J. G. Agardh (*Till Algernes*, iv. 79) under the name of *Ptilophora pinnatifida;* but in this species, of which a specimen exists in the herbarium at Kew, the cystocarps occupy the middle of the ligules terminating the teeth, and the ligules are themselves very much shorter, not exceeding ¼ in. in length. Dr. Agardh, who has seen my specimens, is of opinion that the two species are distinct.

These two species should in my opinion form, together with a Japanese plant described by Okamura (*Hedwigia*, xxxiii. 190, t. x.) under the name of *Gelidium subcostatum*, a separate section of the genus *Ptilophora*, characterized by the flattened frond without proliferations on the surface. The Japanese plant shows exactly the same structure of four layers in the frond, but the tetrasporic sori occupy the whole of the teeth of an abbreviated pinnule; the root is fibrous; the plant branches in the same umbellate manner as in *P. Beckeri*, at about an inch above the base, but the branches are shorter and more crowded, and the teeth do not elongate into ligules. The habit and structure of the plant nevertheless ally it to *Ptilophora* rather than to *Gelidium*, in which I have not seen the infra-cortical fibrous layer characteristic of *Ptilophora*.

3. ERYTHROCLONIUM CORALLINUM, nom. nov., planta denuo descripta (*Gastridium corallinum* Suhr in *Flora*, xix. 344, t. iv. fig. 31 (1836), fronde cæspitosa, unciali, fere tota stricturis articulata, ad stricturas irregulariter dichotoma, ramis paucis subcorymbosis, articulis ellipticis, obovatis, terminalibus brevioribus diametro duplo-longioribus, infimis subcylindricis diametro 4–6 longioribus, sphærosporis zonatis sparsis.

Hab. The Kowie, *Dr. H. Becker*, 1885.

This small species bears a considerable resemblance to young plants of *Chylocladia articulata*, but is very sparingly branched, and does not exceed an inch in height. The specimens found by Suh were apparently not more than $\frac{1}{2}$ in. in height, and were growing on *Hypnea Ecklonii*. In my specimens the lower part of the plant consists of an intricate apparently decumbent mass of ramuli, of which the articulations are nearly cylindrical; these are followed by a few elliptical articulations, the upper ones becoming pyriform and then obovate. The plant was sent to me by Dr. Becker under the name of *Lomentaria corallina* Kütz. (*Tab. Phyc.* xii. t. 96, p. 34). It does not appear to have been collected by anyone since it was first found by Suhr, until rediscovered by Dr. Becker. On one of Dr. Becker's specimens I found zonate tetraspores, which indicated that it probably belonged to *Erythroclonium* or *Rhabdonia*, but could not belong to *Chylocladia*, *Champia*, or *Cœloclonium*, since these have tripartite tetraspores. The axile siphon and the lax tissue of branching threads in the articulation show that it must be referred to *Erythroclonium* rather than to the *Opuntiopsis* section of *Rhabdonia*. From *Areschougia* it differs entirely in habit, its more lax structure, and more slender axile siphon. Although the cystocarps have not been described,* Miss Barton tells me that she found one on a specimen in the British Museum Herbarium, and that it presented, so far as she was able to judge with a lens, the characteristic appearance of those of *Erythroclonium*. I have therefore no hesitation in placing the plant in that genus.

It is interesting to note that two out of the three species here described belong to Australian genera, and thus increase the number of genera common to Australia and S. Africa. Dr. Becker is to be greatly congratulated on the large number of interesting new species that he has already discovered in Natal.

4. **Grateloupia Wattii**, n. sp. Amongst a series of specimens sent to me from India for identification by Dr. George Watt, C.I.E., I found a specimen of a *Grateloupia* which differs from any of the known species, although most nearly allied to *G. Cutleriæ*. I have therefore taken this opportunity of publishing a description of it as follows:—

G. Wattii, n. sp., radice scutata, fronde palmatim divisa, lobis imbricatis lanceolatis oblongis, basi parum attenuatis, apice obtusiusculis, margine undulato, crenulato-dentato. Cystocarpiis per totam frondem densis.

Hab. Verawal, Kathiawar, India, *Dr. G. Watt*, February, 1894.

This species differs from *G. Cutleriæ* in the remarkably palmate character of the fronds, the segments of which overlap so much at the base that it is not possible to lay them out in one plane; in the base of the segments being scarcely attenuated, and in the absence of proliferations from the surface of the frond. The colour of the plant has evidently been destroyed by exposure, as it has only a dull pale brownish colour like that of *Punctaria latifolia*. It adheres closely to paper. The stipe above the scutate base does not exceed $\frac{1}{12}$ in. in height, and the very few proliferations present are very small, linear lanceolate, and obtuse.

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* It is not certain, from the description given by Suhr, whether the fruit figured really consists of cystocarps or of a *Dermocarpa* or other parasitic alga.

A NOTE ON NOMENCLATURE.

By B. Daydon Jackson, Sec. L.S.

In the haste to discover startling novelties in nomenclature, it is but natural that many mistakes should be made; the following instance is worthy of attention as denoting a tendency to overlook facts, and to mislead others who have not access to the authors quoted.

Professor C. S. Sargent, in his *Silva of North America*, ix. 27, employs Sweet's name *Fagus americana* for a tree which has hitherto been known as *F. ferruginea* Ait.; he cites as his authority Münchhausen, *Der Hausvater*, v. 162 (1770). This work seems to be scarce; I did not know of the existence of a copy in London until the printing of the *Index Kewensis* was proceeding, and then I found an imperfect copy in the library of the Linnean Society, which had been in the possession of Linnæus, but had not been catalogued, and so escaped attention. I will extract the portions which relate to the tree in question, so as to make clear the actual position of facts. The title of the same memoir varies, as shown by the use of parentheses in the following:—

(Ausführliches) Verzeichniss aller Baüme und Stauden welche in Deutschland (in freyer Luft) fortkommen (oder als solche angesehen werden können).—Bd. v. Th. i. S. 79–365.

p. 161.]
LXXI. * I. FAGUS. Büchen . . .
i. Fagus sylvatica. . .
Der gemeine Buchbaum.
The Beech Tree.
Franz. Le Hêtre, Fau, Feau, Fouteau.
Einer der gemeinsten Baüme in unsern Waldern.

p. 162.] b. * Fagus foliis ex luteo variegatis.
Eine varietät mit gelb gescheckten Blättern.

c. * Fagus sylvatica foliis atro-rubentibus.
Die Blutbüche.
The Purple Beech Tree.
Eine blosse zufällige Varietät, mit dunkel purpurfarbenen Blättern, welche unter andern grünen Baümen eine artige Abwechselung giebt.

d. * Fagus americana latifolia.
The broad leaved american Beech Tree.
Man erhält den Saamen davon aus America unter den Namen von Beech-nuts; sie unterscheidet sich wenig von der gemeiner Buche; die Frucht ist kleiner und weniger stachlicht.

LXXII. II. Fagus Castanea. Castanien . . .
i. * Fagus Castanea . . .
b. Castanea foliis ex aureo eleganter variegata.
2. Fagus Castanea pumila. . . .
The Chinquapin—. . . (&c.).

If anyone will carefully read the foregoing, he must see that each species is numbered in Roman capitals, and the varieties are described below them, with a letter or similar distinguishing mark, and a Latin phrase. Therefore *Fagus americana latifolia* is on all fours with *Fagus sylvatica foliis atro-rubentibus*—that is, not meant as a specific name. As such it first came into being at Robert Sweet's hands in 1827; he is the authority for it, not Münchhausen, making a difference of fifty-seven years in the publication, and of course subsequent to Aiton (1789).

ICELAND AND FAROE BOTANY.

By Arthur Bennett, F.L.S.

Following up the notes on the Floras of Iceland and the Faroe Isles I have published in this Journal, I give the substance of a paper by Dr. F. Kurtz, printed in the *Verhandlungen des bot. Vereins der Prov. Brandenburg*, 1895, pp. 150–8, entitled "Verzeichnis der auf Insel und der Faer-ϕern im Sommer 1883 von Dr. Konrad Keilhack gesammelten Pflanzen."

To the Icelandic list there are very few real additions, and many of the stations given are repetitions of those in Groenlund's *Flora*. One very curious addition may be noted, i.e., "*Solanum tuberosum*, Reykholt." Probably a good many people know that the potato is grown in Iceland (especially in the north), but it can hardly be admitted into a botanical list.

I have taken out a few of the more interesting species, and localities; those with an asterisk are, so far as I know, new records.

Iceland.

The letters placed after the habitats refer to the north, south, east, or west of the island.

Ranunculus pygmæus. Berg Baula W.

Cakile maritima. Hvalfjördr W.

Cochlearia officinalis. Patreksfjördr N.W.

Viola sylvatica Fr. Reynivellir W.

Lathyrus maritimus. Brynjudalr W.

Sanguisorba officinalis. Thyrill.

Saxifraga Cotyledon. Seydisfjördr E.

Matricaria inodora β. phæocephala Rupr., *f. *pumila* Knutz. Reykjavik W.

Leontodon autumnalis, *f. *asperior* Lange. Seydisfjördr E. Aukreyri N.

Gnaphalium norvegicum. Westfuss des Berges Baula W.

G. uliginosum. Reykir W.

Campanula rotundifolia. Eskifjördr E.

**Euphrasia officinalis* v. *latifolia* Lange = *E. latifolia* Pursh. Reykir, W.

Myosotis arenaria Schrad. [*stricta* Link.]. Hvammr N.

Plantago media. Reykholt, W. Saljiland S.

**P. lanceolata β. dubia* Asch. Seljaland S.

Salix ovata Ser. *α. latifolia* Anderss. Berg Baula W.

**Carex pulla* f. *gracilescens* Kurtz.

The Faroes.

**Ranunculus Flammula* f. *minor* Kurtz. Syderoe; Stromoe. Perhaps the same as the plant found by Dr. Shoolbred in the Hebrides.

**Polygala vulgaris γ. grandiflora* Bab. = *P. buxifolia* Ball in herb. = *P. Ballii* Nyman, *Consp. Fl. Europ.* 83, 1878. Stromoe and Syderoe. Apparently determined from the descriptions in Babington's *Manual* and *Journ. Bot.* 1877, 171. Such cases, I think, are open to doubt; a comparison of authentic specimens is necessary.

**Viola sylvatica* Fr. v. *arenaria* (DC. sp.). Stromoe.

Cerastium trigynum Vill. Syderoe.

Hypericum pulchrum f. *pumila* Kurtz. I should expect this to prove the same as f. *procumbens* Rostrup.

**Euphrasia officinalis* v. *latifolia* Lange. Stromoe; Syderoe.

**Myosotis stricta* Link.

**Pedicularis palustris* f. *pumila* Kurtz. Syderoe.

**Plantago maritima* v. *borealis* Kurtz = *P. borealis* Lange. Stromoe. But this is the *P. maritima ε. glauca* Hornem, *Oec. Pl.* 167, and so already named as a variety.

**Potamogeton alpinus* Balbis. Stromoe. This is a notable addition to the Faroen Flora. It occurs in Iceland!, Greenland!, but is not recorded for the Shetlands or Orkneys, though found in several stations in Caithness. In Norway it is found north to 70° 25′ (Norman, *Index Supp. loc. nat.* 38, 1864); in Finland to 68° 30′ (Wainio, *Notes sur la Fl. Lap. Finland*, 70, 1891).

I believe I am correct in stating that Lieut.-Col. Feilden intends to bring out a work on the Fauna and Flora of these islands, and in the latter several additions will be made to the known list of species.

It is remarkable that (so far as I know) not one of the "List of Icelandic Plants requiring to be verified" that I gave in this Journal for 1890, p. 82, seems to have been gathered; all surely cannot be errors, yet the majority are plants well known, not obscure or critical species, which in that case might have been passed over. These species numbered about ninety, a large number to be recorded on seemingly such slender grounds; in any future Flora of Iceland it will be well to place all these in square brackets, or relegate them to an appendix.

Since the above was written, notices of Faroen plants have appeared in the *Botaniska Notiser* for 1896, häft 2.

NEW PHILIPPINE PLANTS.

By A. B. Rendle, M.A., F.L.S.

The Department of Botany of the British Museum has recently received two small packets of plants from Mr. John Whitehead, who is now collecting in the Philippines. The localities given are in one instance the highland of Lepanto, 5000–7000 ft., in north-west-central Luzon; in the other Mt. Dulangau, at a height of 5000 ft. in the island of Mindoro. Some of the plants are new; these are described below. Others, like *Pinus insularis* Endl., *Vaccinium Villarii* Vidal, *Gaultheria Cumingiana* Vidal, and *Rhododendron rosmarinifolium* Vidal, all from Lepanto, are already known as endemic in the islands.

A third set are of interest in extending the geographical range of known species. Such are the following:—

Podocarpus falciformis Parl. Mt. Dulangau. Distribution: Mts. Poe and Mattang, Borneo, 3000 ft.

Phyllocladus hypophylla Hook. f. Mt. Dulangau. Distribution: Borneo. Mts. Poe, 3000 ft., and Kina-balu, 8000 ft.

Dacrydium elatum Wall. Mt. Dulangau. Distribution: Malaya.

Cephalotaxus Mannii Hook. f. Highland of Lepanto. Distribution: Khasia Mts., 5000 ft. The specimen contains leaves only, but there seems no doubt of its identity.

Burmannia longifolia Becc. Mt. Dulangau. Distribution: Perak; Borneo; New Guinea (*H. O. Forbes*).

Platyclinis latifolia Hemsl. Mt. Dulangau. Distribution: Malaya.

Litsæa villosa Blume. Mt. Dulangau. Distribution: Java.

Gaultheria borneensis Stapf. Highland of Lepanto. Distribution: Mt. Kina-balu, 12,000 ft.

Rhododendron cuneifolium Stapf. Mt. Dulangau. Distribution: Mt. Kina-balu, 7000 ft.

Strobilanthes pentstemonoides T. And. Highland of Lepanto. Distribution: Subtropical Himalaya; China. Differs from the Indian form in its slightly smaller (corolla 1 in. long), more open flowers, and more compact habit. The Chinese specimens are larger.

Vaccinium mindorense, sp. nov. Fruticosus, ramis ramulisque tenuibus rigidis ascendentibus bene foliatis, junioribus puberulis; foliis glabris coriaceis parvis ovalibus integris uninerviis: floribus solitariis pedicellatis; calycis lobis late triangularibus; corolla urceolata læte purpurea, lobis brevibus recurvatis; staminibus 10, in corolla inclusis, filamentis planis glabris, antheris muticis, minute puberulis, poris apicalibus dehiscentibus; ovario infero cum pedicello articulato, loculis pluriovulatis; stylo super basin tenuem inflato lineari-oblongo sub stigmate capitato angustato.

Hab. Mindoro Is., Mt. Dulangau.

Apparently a small herb with straggling growth; the stiff branchlets reaching 23 cm. in length. The small spreading leaves have a short stalk 2 mm. or less in length, and a blade of very uniform shape, 10–12 mm. long by 3·5–5 broad. The pedicel is 6 mm. long, and articulated with the ovary. The broad spreading calyx-lobes bear at their tips a tuft of short hairs. The bright crimson corolla is 6 mm. long, 3 mm. across the mouth, and 5 across the inflated lower portion; the blunt lobes are 1·5 mm. long. The stamens, including the anther (1·5 mm.), are 4 mm. long; the style and stigma are also 4 mm. The style becomes suddenly inflated above the base, assuming a linear-oblong shape.

Has the habit of *Diplycosia microphylla* Becc.

Rhododendron lussoniense, sp. nov. Lignosus, ramis glabris brunneis; foliis oblanceolatis, facie superiore glabra, inferiore squamulis glandulosis nigris notata; bracteis castaneo-brunneis, glabris, ovatis, mucronatis; pedicellis pubescentibus, flores haud æquantibus; calyce parvo patelliforme; corolla alba inter mediocres, tubo infundibuliforme cum glandulis brunneis externe notato, lobis, tubum æquantibus, cuneato-spathulatis; staminibus 10, filamentis in parte inferiore pubescentibus superne glabris; ovario piloso 5-loculare.

Hab. North-west-central Luzon, highland of Lepanto.

The stiff woody leafy shoots of the third season are 3 mm. in diameter, and bear the leaves crowded near the ends. The petioles are short (4–5 mm. long), the blades 4·5–5·5 cm. long, 1·2–1·7 cm. broad; the lower surface bears numerous roundish black scales. The smooth bracts are 6–12 mm. long. The pedicels are 2·5 cm. long; the flowers, which have been pink or tinged with pink, 3 cm. long and about the same across. The corymb in the single specimen is 3-flowered. The calyx is reduced to a flattened plate with 5 scarcely indicated lobes. The corolla-tube and lobes are each 2 cm. long; the former is 1 cm. across at the mouth, the latter are entire, with a slightly emarginate apex, and 16 mm. broad in the spreading upper part. The stamens including the anthers (4 mm.) are 2·5 cm. long, of equal length with the pistil. The ovary and lower part of the columnar style have numerous short hairs.

Near the Indian *R. formosum* Wall., but distinguished by its smaller flowers.

Rhododendron Whiteheadi, sp. nov. Lignosus, ramis duris rigidis, ramulis glabris rubescentibus; foliis obovatis, interdum orbiculari-obovatis rarius ovalibus, apice rotundo vel emarginato, basi sæpius cuneata, facie superiore glabra atre viride, inferiore glandulis crebris punctata; bracteis ovatis obtusis minute puberulis, pedicellis validis quam flores brevioribus velut calyce pubescentibus; calyce parvo patelliforme; corolla inter mediocres atre purpurea, campanulata lobis truncate obovatis cum apice lato retuso, tubo æquantibus; staminibus 10 inæqualibus basi lata breviter pilosis; ovario 5-loculare conico dense piloso, stylo super basin pilosam glabro apice clavato.

Hab. North-west-central Luzon, highland of Lepanto.

The woody shoots are stiff and hard, with the leaves closely crowded at their ends; shoots of the third season are 3 mm. in diameter. The short stout pedicels are 4–5 mm. long; the leaves 2·5–4·5 mm. long, 1·5 to nearly 3·5 broad. The pale brown bracts are 9–13 mm. long, the pedicels 13 mm. The deep crimson bell-shaped flowers are borne in umbels of three, and are 2·5 cm. long by 2·75 cm. across. The slightly pubescent corolla-tube is 12 mm. long; the lobes are 12 mm. long, and 12 mm. across the top. The stamens including the anthers (3 mm.) are 17–20 mm. long; the ovary 1·5 cm.

Near the Bornean *R. verticillatum* Low, but distinguished by the shape of its leaves, especially the marked tendency to a wedge-shape, the few-flowered inflorescence, and the hairy, not scaly, pedicels and ovary.

Rhododendron subsessile, sp. nov. Lignosus, ramis teretibus cum setulis brunneis appressis indutis; foliis ovalibus, apice abrupte breviter et obtuse mucronatis, petiolis et facie inferiore laminæ, præcipue in venis, brunne setuliferis, facie superiore cum setulis albis induta; bracteis læte brunneis ovatis vel orbiculari-ovatis, mucronatis; flore solitario subsessile, inter minores; calyce lobis 5 subrotundis fimbriatis; corolla rosea late infundibuliforme, tubo sub-brevi lato, lobis ovatis vel ovato-oblongis, staminum filamentis in parte inferiore breviter pilosis, superne glabris; ovario 5-loculare subrotundo dense piloso, stylo flexuoso basi piloso.

Hab. North-west-central Luzon, highland of Lepanto.

The younger shoots are covered with closely-packed upwardly-directed appressed brownish bristles, which in the third season are wearing off; the shoots of the third season are 3 mm. in diameter. The leaves, which are scattered along the shoot, vary in length of lamina from less than 2 to 4 cm., and in breadth from 6 to 14 mm.; the petiole is from 3 to 6 mm. long. The broad bracts are 8–9 mm. long; the hairy pedicel 4 mm., the calyx-lobes 2–3 mm. The broad corolla-tube is 9 mm. long, 5 mm. in diameter below, and only slightly more above; the lobes are 12 mm. long, 8–9 mm. broad. Some of the stamens have fallen; those present are 2 cm. long. The short ovary (3 mm. long) is densely covered with shiny reddish upwardly directed hairs; the uniform style is 2 cm. long, ending in a small capitate stigma.

Is near *R. ledifolium* G. Don, but is, I think, distinct; the solitary almost sessile flower is much smaller than in the Chinese-Japanese species.

Microstylis mindorensis, sp. nov. Glabra, caule, in specimine unico, basin carente, erecto cum foliis binis dissitis ovatis acutis, 7-nerviis, margine crispulis; scapo parte inferiore nudo, superne racemum multiflorum formante; bracteis viridibus membranaceis triangulo-setaceis deflexis; floribus pro genere magnis purpureis; sepalis petalisque subæqualibus; sep. dorsali ligulato-oblongo 3-nervio, lateralibus oblongis 4-nerviis; petalis ligulatis 3-nerviis; labello magno orbiculare, lobo medio apice bifido, lobis lateralibus in auriculas post columnam imbricatas productis; columna brevi, stelidiis incurvatis obtusis.

Hab. Mindoro Is., Mt. Dulangau.

The plant, which has been broken off below the pair of leaves, is 20 cm. high. The leaves, which are papery when dry, have a rather long sheathing base (3 cm.), passing somewhat abruptly into the blade (8 × 4·5 cm.). The scape is 15 cm. long, the raceme occupying its upper half. The delicate 1-nerved bracts are 7–8 mm. long; the pedicel with the decurved ovary reaches in the lowest flowers 1·5 cm. The dorsal sepal is 6 × 2·5 mm., the laterals 6 × 3·5 mm., the petals 6·5 × 1·75 mm. The large flattened lip measures 1 cm. each way. The column including the small heart-shaped anther is 2 mm. long, and is produced on each side of it into a short bluntly-rounded incurved arm.

Approaches *M. purpurea* Lindl., from Ceylon and Java, but is at once distinguished by its large round lip. The flowers are also larger.

Zeuxine Whiteheadi, sp. nov. Herba foliis glabris ovatis subradicalibus; scapo pubescente elongato; spica brevi pauciflora; bracteis lanceolatis ovarium paullo excedentibus; floribus pro genere magnis; sepalis petalisque uninerviis subæqualibus, sep. dorsali oblongo-lanceolato, lateralibus oblongo-ligulatis, petalis oblongis basi angustatis, labelli ungue cum basi saccata, glandula bina carnosa rotundata includente, et marginibus membranaceis inflexis, alis orbicularibus crispulatis; columna brevi, processubus anterioribus parallelis latis apice angustatis, anthera ovato-lanceolata.

Hab. Mindoro Is., Mt. Dulangan.

A slender plant 24 cm. high, leaves 2 cm. long by a little more than half as broad; the slender sterile bracts 10–13 mm. long; amplexicaul below, narrow and pointed above; fertile bracts free, lanceolate, with ciliolate margin, 8·5 mm. long, decreasing upwards, spike scarcely 2·5 cm. long; dorsal sepal 5·5 × 2 mm., lateral sepals 6 × 2·5 mm., petals 5·5 × 2·5 mm., lip 5 mm. long; claw darker in colour, with delicate infolded upper edges, 2·5 mm. broad; limb abutting directly upon the claw (4·5 mm. broad) of two roundish wings with crisped undulating margin.

A distinct species, perhaps nearest to *Zeuxine affinis* Benth., differing in its short spike, larger flowers, and especially in its lip-characters.

NOMENCLATURE OF BRITISH PYRENOMYCETES.

By Annie Lorrain Smith.

The large and important group of the Pyrenomycetes has recently been added to the exhibition of British Fungi in the Natural History Museum. Drawings illustrating the genera have been placed on the cards, and, as far as possible, the plants are exhibited with descriptions of each species.

There has been hitherto no complete compilation of the orders for Great Britain, and the records of species have been drawn from various published lists. The arrangement mainly followed has been that adopted by Winter in Rabenhorst's *Cryptogamic Flora.*

A few changes of nomenclature have been rendered necessary, notably in the *Sordarieæ*, a group to which Winter has devoted special attention. He gives great prominence to spore characters combined with the habit of the plant, and, following these lines, he has placed in three well-defined genera all those species that have non-septate spores: *Sordaria*, *Hypocopra*, and *Podospora*. The spores in the first two genera are alike, black or brown, elliptical-shaped spores with a colourless gelatinous wall, but the habit is different: the perithecia of *Sordaria* grow singly, those of *Hypocopra* are combined in a stroma, the only genus in this group that grows in this manner.

Podospora includes those species in which the dark-coloured spores have one or more colourless gelatinous appendages. *Delitschia* and *Sporormia* have variously septate spores, and as this character has been always recognized as of generic importance, no change has beeen made in these genera.

Following Winter's arrangement for the genera with simple spores—

Hypocopra stercoraria Sacc. (*Sphæria stercoraria* Sow.) becomes *Sordaria stercoraria* A. L. Sm. *H. scatigena* Sacc. (*Sph. scatigena* B. & Br.) becomes *Sordaria scatigena* A. L. Sm. *H. vesticola* Sacc. (*Sph. vesticola* B. & Br.) becomes *Sordaria vesticola* A. L. Sm.

Sordaria Carbonaria Sacc. (*Sph. Carbonaria* Plowr.) becomes *Podospora carbonaria* A. L. Sm.: the brown spores have a persistent small colourless appendage. *S. caudata* Sacc. (*Sph. caudata* Curr.) becomes *Podospora caudata* A. L. Sm. *S. sparganicola* Bucknall. becomes *Podospora sparganicola* A. L. Sm.

While preparing the Hyphomycetes for exhibition, I found that the name *inæqualis*, proposed by Cooke & Massee for a species of *Oospora*, was already occupied by *O. inæqualis* Sacc. & Vogl. (*Torula inæqualis* Corda). I therefore propose to call this plant *O. Masseei*.

BIBLIOGRAPHICAL NOTES.

XIII.—"The Rarest Typographic Product of Linnæus."

[Herr von Flatt has lately published in the *Botanisches Centralblatt* (Bd. lxvi. (1896), 216–222) an interesting article on two suppressed pages of the first edition of Linnæus's *Species Plantarum*, entitled "Das seltenste typographische Product Linné's." The fact was previously known, for a note to that effect was written by Mr. W. Carruthers in the example cited at the end of this note. The special interest attaching to Herr von Flatt's notice is, that he gives *facsimile* reproductions of the suppressed pages; he has, however, drawn some erroneous inferences. The following is a shortened translation of his article, to which I have appended a few remarks. —B. Daydon Jackson.]

Assuredly many botanists have handled the first edition of the *Species Plantarum* since its first appearance, but up to the present day not a single one has noticed—or at least has not published—that in this epoch-making "Editio princeps" the leaf which is numbered pages 89–90 is, in each specimen, pasted in afterwards.

What was it that induced Linnæus to intercalate this leaf? What was the text of these suppressed pages?

Quite unexpectedly I obtained possession of a copy of the first edition of the *Species Plantarum* in which this leaf, intended to be cancelled, occurred in the place of the customary one.

Without question this leaf is Linnæus's rarest printed product, and in this aspect it ranks above his anonymous apology *Orbis eruditi Judicium*, because the latter work was not condemned to suppression. . . . Literature has no acknowledgement of these two pages of the *Species Plantarum*, and this has been the reason which has moved me to publish these pages, intended to be suppressed, in an accurate form.*

The copy in my possession is still further noteworthy from the fact of its entirely wanting pages 269–270, instead of which (at the place where page 269 should begin "*Cassine* Hort. Cliff. 72," &c., and end on page 270 "Sauv. Monsp. 45," including the genera *Cassine*, *Sambucus*, *Spathelia*, *Staphylea*, and *Tamarix* with their species) is another page with the pagination 89–90, but this contains the emended text (by which completion should take place), and without any pasting forms an integral part of the printed sheet. It is thus evident that the printing of the work had already reached pages 269–270, that is, as far as signature R, before pages were substituted for those cancelled. It was at this point that the bookbinder became aware of the rectification that must be made, by exchanging the cancelled pages for these.

The *facsimile* reprint of the original cancelled pages offers interest enough (cf. *l. c.*).

First of all we see that Linnæus published a genus *Guerezia* with two species, Löfling's *Guerezia hispanica* and Gronovius's *Guerezia canadensis*. That this genus was actually so called, admits of no doubt. for the name is nowhere shortened, but is written at full length in all three cases. In the table of contents, however, this name does not occur, nor in any other of his works.

What was the reason for the speedy suppression of this generic name?

This is answered by the substituted leaf with pp. 89–90 (as also in the contents table), where, instead of the remarkable *Guerezia*, *Queria* is to be read, also with the two species mentioned above, *Queria hispanica* and *Queria canadensis*. Löfling gave this generic name in honour of Don José Quer y Martinez, a celebrated surgeon in the Spanish army, who had botanized with him.

As the genus *Guerezia*, except on this leaf, is nowhere to be found in the botanical literature of the world, it has for that reason an unusual historic interest.

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* I have been informed that this pasting in is very evident in the copies which are in the Clausenburg University and Cardinal Haynald's library in Budapest: I have personally convinced myself of that fact in the copy belonging to the Budapest University.

A comparison of both the leaves in question offers still further interest. Thus the cancelled page 89 contains only one species of *Minuartia*, while the added leaf contains three. It appears that Linnæus wrote *Minuartia hispanica* by some absent-mindedness on the cancelled page 89, but corrected it on the reprinted page 89 as *Minuartia dichotoma*; and that the latter specific name is correct is corroborated by Löfling's cited passages, and also in the second edition of the *Species Plantarum*.

We now come to the question, What impelled Linnæus to establish, and afterwards suppress, the generic name *Guerezia*? I do not think I err in ascribing this to some mistake in, or wrong-reading of, Löfling's manuscript. Löfling first informed Linnæus of *Minuartia dichotoma* in a letter dated Madrid, 1/12 June, 1752, and described the plant . . . adding, "The genus is a difficult one, nevertheless I have referred it to *Mollugo*, although I know that its outward form is widely different." In another letter, Madrid, 17/28 August, 1752, Löfling continues his report thus:—

"With regard to the *Mollugo* . . . I am now of a different opinion. When I was at St. Fernando, on a visit to Dr. Barnades, I obtained a new species (*Guerva*) still smaller, quite distinct, but having the same structure, so that both facies and fructification dictate that it is a peculiar genus, and different from *Mollugo*. The only thing which perplexes me is that I did not see the latter at St. Fernando in flower, and further, that it has only a single seed, while the previously described one is polyspermous."

Now Linnæus mistook the word "Guerva," and for it wrote *Guerezia*, of which Löfling himself under *Queria* wrote further, "ob capsulam monospermam debet distinctum Genus constituere."

Löfling's botanical part in the Iberian peninsula yielded five new genera. Four of these he had himself established, *Minuartia*, *Ortegia*, *Queria*, *Velezia*, but the fifth Linnæus entitled *Loeflingia*. . . . In a letter from Madrid, dated 2/13 November, 1752, Löfling begs that his four genera may be taken up. . . . Linnæus at once acceded to the wish of his esteemed pupil, and in May of the following year the *Species Plantarum* published all five genera. From this it is clear that the *Species Plantarum* was still under correction whilst passing through the press. Linnæus, up to pp. 89–90, only had knowledge of one species of *Minuartia*, to which, by some mistake or absence of mind, he gave the name *hispanica* instead of *dichotoma*. During the printing he became aware that *Guerezia* should be regarded as *Queria*, and as he had since got information of two other species of *Minuartia*, he hastened to insert these corrections and additions to the still unfinished printing of the *Species Plantarum*, and to substitute new pages 89–90 for those already printed.

I have stated that the existence of these cancelled pages has long been known, as shown by the notes by Mr. Carruthers (dated 25th Sept. 1871) in the copy of the above-mentioned work which he gave to the herbarium library at Kew:—

"Pp. 89, 90 were cancelled, but in this copy the original pages are retained. In the leaf which replaced it the following changes are made:—*Minuartia hispanica* is *M. dichotoma*, and two species are added, *M. campestris* and *M. montana*. The genus *Guerezia* is changed into *Queria*."

"Pp. 259, 260, like pp. 89, 90, were cancelled. In the pages which replaced them the following changes are made:—Between *Chærophyllum* and *Seseli* the genus *Imperatoria* is introduced. The only species given is *I. Ostruthium*. And on p. 260 *Seseli elatius* is omitted."

[The view on which Herr von Flatt lays stress—that it was while printing sheet R that Linnæus introduced his amended leaf, pp. 89, 90—is, I am sure, quite erroneous. No printer would dream of mutilating a sheet by putting in a cancel. If the volume be referred to, the two leaves spoken of by Mr. Carruthers will be found to be more heavily inked, showing that they formed no part of any ordinary sheet, but were printed solely by themselves for substitution. In Herr von Flatt's copy the binder has made a sad bungle, which need not be set out in detail here; if he will look at his copy again, he will probably see the pasted portion is visible on p. 259, though not on p. 270, hence his mistake in assuming that the corrected page formed an integral part of the sheet.—B. D. J.]

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

William A. Clarke, F.L.S.

(Continued from p. 276.)

Panicum glabrum Gaud. Agrost. Helv. i. 22 (1811). **1829.** "Gathered by Miss Molesworth at Weybridge, Surrey, where it had long been known to exist by Mr. Borrer."—W. J. Hooker in E. B. S. 2613 (as *Digitaria humifusa*); many earlier records of *D. sanguinalis* probably belong to this species.

Setaria viridis Beauv. Agrost. 51 (1812). **1666.** "Gr. Panici effigie spica simplici. In a field betwixt Tuddington and Hampton-Court."—Merr. 56.

Spartina stricta Roth, Neue Beytr. i. 101 (1802). **1666.** "Gr. sparteum capite bifido vel gemino. At Crixey Ferry in Essex."—Merr. 58.

S. alterniflora Loisel, Fl. Gall. ii. 719 (1817). **1836.** "On the flat and muddy shore, banks of the Itchen river, Southampton, Aug. 8, 1836."—Bromfield in Comp. Bot. Mag. ii. 255.

S. Townsendi H. & J. Groves in Rept. of Bot. Exch. Club, 1880 (1881). **1881.** "Mud flats near Hythe, South Hants. H. & J. Groves."—*L. c.*

Leersia oryzoides Sw. Prod. Fl. Ind. Occ. 21 (1788). **1844.** Found by W. Borrer, Sept. 24, 1844, "in three places in the Henfield level," Sussex.—Phytol. i. 1140.

Phalaris arundinacea L. Sp. Pl. 55 (1753). **1640.** "Gramen arundinaceum acerosa gluma nostras. In the low moist grounds by Ratcliffe neere London."—Park. Theatr. 1273.

Anthoxanthum odoratum L. Sp. Pl. 28 (1753). **1666.** "Gramen Anthozanthum spicatum J. B. tom. 2, pag. 466. locum non memini."—Merrett, 48.

Hierochloe borealis Roem. & Schult. Syst. Veg. ii. 513 (1817). **1821.** "In a narrow valley called Kella, Angus. G. Don."—Hook. Scot. 28. "Discovered in 1812."—E. B. S. 2641 (1830).

Alopecurus myosuroides Huds. i. 23 (1762). *A. agrestis* L. **1597.** "Gramen alopecuroides minus. In the moist furrowes of fertill fields."—Ger. 10. "Near Paddington," Buddle.—Ray Syn. iii. 397 (1724).

A. fulvus Sm. E. B. 1467 (1805). **1796.** "By the stews in Edgbaston Park," near Birmingham.—With. Bot. Arr. ed. 3, 121, as var. of *A. geniculatus.*

A. geniculatus L. Sp. Pl. 60 (1753). **1597.** "Gr. fluviatile spicatum."—Ger. 13.

A. bulbosus Gouan, Hort. Monsp. 37 (1762). **1724.** "Gramen myosuroides nodosum. Found by Mr. Jam. Sherard."—Dill. in Ray Syn. iii. 397, with a figure, but no locality. "In the first field next the road before you go into Northfleet (Kent). Dr. Wilmer."—Huds. ed. 1, 24 (1762).

A. pratensis L. Sp. Pl. 60 (1753). **1597.** "Gramen alopecuroides majus. In the moist furrowes of fertill fields."—Ger. 9.

A. alpinus Sm. E. B. 1126 (1803). **1803.** "Mr. G. Donn has favoured us with this new species of *Alopecurus*, discovered by himself on mountains about Loch Nagore [Lochnagar] in Aberdeenshire."—E. B. *l. c.* "Mr. R. Brown . . . . informs me that he communicated it to Mr. G. Don."—Sm. E.Fl. i. 80 (1824). Brown discovered the plant in August, 1794, as stated on the ticket accompanying his specimens in Herb. Mus. Brit.

Milium effusum L. Sp. Pl. 61 (1753). **1597.** "Gramen miliaceum."—Ger. 6. Johns. Kent (1632), 29.

Phleum alpinum L. Sp. Pl. 59 (1753). **1777.** "Said to be found on Craigneulict above Killin."—Lightf. Fl. Scot. 1133. "In montibus propè Garway Moor," Scotland.—Jas. Dickson in Trans. Linn. Soc. ii. 288 (1794).

P. pratense L. Sp. Pl. 59 (1753). **1633.** "Gramen typhinum majus. . . . Plentifully . . . about London."—Ger. em. 11.

P. phalaroides Koel. Gram. Gall. & Germ. 52 (1802). **1785.** "On Newmarket Heath."—Relhan, Fl. Cambs. 23. "First discovered in Great Britain by Mr. Woodward & Mr. Crowe near Swaffham, Norfolk, in 1780."—With. Bot. Arr. ed. 2, 66 (1787).

P. arenarium L. Sp. Pl. 60 (1753). **1670.** "Gramen typhinum maritimum minus. Sea Cat's tail Grass."—Ray Cat. 157. "Observed upon Swaffham heath by James Crowe Esq. and on that of Newmarket by the Rev. Mr. Hemsted."—E. B. 222 (1794).

Mibora verna Beauv. Agrost. 167 (1812). *Knappia agrostidea* Sm. E. B. 1127 (1803). **1762.** "Habitat in Wallia, D. Stillingfleet invenit."—Huds. Fl. Angl. 28; but see Knapp, Gram. Brit. 110. "Frequent in sandy pastures on the south-west coast of Anglesea, Rev. Mr. H. Davies."—Sm. Fl. Brit. i. 82 (1800). As to Lobel's reported Essex locality (Lob. Ill. 20), see Gibson's Fl. Essex, 360.

Agrostis setacea Curtis, Fl. Lond. vi. 12 (1798). **1778.** "Supra Hall Down prope Exeter."—Huds. ed. 2, 31 (*A. canina*, var. γ.)

A. canina L. Sp. Pl. 62 (1753). **1762.** "In pratis humidis frequens."—Huds. ed. 1, 26.

A. alba L. Sp. Pl. 63 (1753). **1716.** "Gramen miliaceum majus paniculâ spadicea . . . . in dry hilly pastures."—Petiver, Conc. Gram. no. 118.

A. vulgaris With. Bot. Arr. ed. 3, ii. 132 (1796). **1670.** "Gramen pratense vulgare spicā fere arundinacea . . . in pascuis nihil vulgarius est hoc gramine."—Ray Cat. 154.

Polypogon monspeliensis Desf. Fl. Atl. i. 67 (1798). **1605.** "Riguis herbidis Comitatus Zout-hamptoniæ proxime salinas & antiquas ædes Drayton vocatas . . . . cis mare duobus miliaribus Anglicis à Portsmouth, ex adverso Vectis Insulæ plurima; . . . . Hunc quoque vdis [udis] fossis lacustribusq: Essexiensis comitatus legi, juxta Thamesis amœnissima fluenta."—Lobel, Adversaria, pars alt. 469.

P. littoralis Sm. Comp. Fl. Brit. ed. 2, 13 (1816). **1641.** "Lagopus perpusillus supinus perelegans maritimus, provenit prope castrum South-Sea Castle miliare Anglico a Portsmouth ad lævam, unciam vix æquans, nullibi antea vidi."—Johns. Merc. Bot. pars alt. 24.

Calamagrostis Epigejos Roth, Tent. i. 34 (1788). **1640.** "Reede grasse of Saint Johns wood."—Park. Theatr. 1180.

C. lanceolata Roth, Tent. i. 34 (1788). **1716.** "The first discovery of this grass is owing to Mr. John Scampton a Curious Botanist, who sent it me from Leicestershire."—Petiver, Conc. Gram. n. 69.

Gastridium australe Beauv. Agrost. 21 (1812). **1690.** "Gramen serotinum arvense panicula contractiore pyramidali . . . Inter segetes locis præcipue ubi aquæ aliquandiu stagnant."—Ray Syn. i. 190. "About Thorndon, Essex. Mr. Hill."—Blackst. Spec. 33 (1746).

Apera Spica-venti Beauv. Agrost. 31 (1812). **1632.** "Agrorum venti spica, Lob."—Johns. Kent, 30.

A. interrupta Beauv. Agrost. 31 (1812). **1848.** "Gathered on June 9, 1848, near Thetford (Suffolk), by the Rev. W. W. Newbould."—Ann. Nat. Hist. 2nd Ser. ii. 149.

Deyeuxia strigosa Kunth, Rev. Gram. 77 (1829). **1885.** Found by Robert Dick at Loch Duran, in Caithness.—Journ. Bot. 1885, 253.

D. neglecta Kunth, Rev. Gram. 76 (1829). **1810.** "Discovered by Mr. G. Don, in June, 1807, in a marsh called the White Mire, a mile from Forfar."—E. B. 2160 ("Arundo stricta").

Ammophila arundinacea Host, Gram. Austr. iv. 24 (1809). **1562.** "Spartum . . . A kinde of sea bente or sea rishe whereof the frayles are made that figges and rasines are caried hether in out of Spayne. The same bent or sea rishe have I sene in Northumberland besyde Ceton Dalavale, and ther they make hattes of it." —Turn. ii. 144, back.

A. baltica Link, Hort. Berol. i. 105 (1821). **1872.** Found in 1871 by Mr. W. Richardson, of Alnwick, on Ross Links, near Belford, Northumberland.—Journ. Bot. 1872, 21, 353.

Aira caryophyllea L. Sp. Pl. 66 (1753). **1605 ?** "Gramen nemorale Avenaceum alterum . . . Hoc idem Gramen aridis collibus theriotrophio Regiæ Grynwicht [Greenwich] Anglo-britanniæ vicinis elapsis annis collegi."—Lobel, Adversaria, pars alt. 465. **1660.** "Gramen montanum panicula spadicea delicatiore." In Cambs.—R. C. C. 69.

A. præcox L. Sp. Pl. 55 (1753). **1670.** "Gr. parvum præcox spicâ laxâ canescente. In glareosis et sterilioribus plerumque nascitur."—Ray Cat. 153. "Harefield Common."—Blackst. Fasc. 38 (1737).

Corynephorus canescens Beauv. Agrost. 90 (1812). **1655.** "Hoc gramen radice capillata crassiore maritimis litoreis Kantiæ oritur."—Lobel, Illustr. 8. "Lobel first discovered this on the Coast of Kent, and Mr. Buddle since him, in Suffolk."—Petiver, Conc. Gram. no. 126 (1716).

Deschampsia cæspitosa Beauv. Agrost. 91 (1812). **1640.** "Gramen segetum panicula speciosa . . . In the borders of corne fields," &c.—Park. Theatr. 1159. ["Gr. segetale," Ger. 5 (1597), is probably this.] See Pet. Conc. Gram. 114.

D. alpina Roem. & Schult. Syst. ii. 686 (1817). **1810.** "Mr. George Don . . . . found it on the high mountains of Clova in Angusshire."—E. B. 2102 ("Aira lævigata").

D. discolor Roem. & Schult. Syst. ii. 686 (1817). *Aira uliginosa* Weihe. **1762.** "In ericeto Strattoniensi in comitatu Norfolk. D. Stillingfleet reperit."—Huds. ed. 1, 30 ("Aira setacea").

D. flexuosa Trin. Bull. Sc. Acad. Pétersb. i. 66 (1836). **1696.** "A D. Doodio observatum & nobis ostensum est."—Ray Syn. ii. 258, 12.

Holcus mollis L. Sp. Pl. ed. 2, 1485 (1762). **1688.** "Gramen caninum paniculatum molle."—Ray Hist. ii. 1285.

H. lanatus L. Sp. Pl. 1048 (1753). **1634.** "Gramen pratense paniculatum molle, Bauh."—Johns. Merc. Bot. 38. Cf. Ger. em. 30^{a}.

Trisetum pratense Pers. Syn. i. 97 (1805). **1670.** "Gramen avenaceum panicula flavescente locustis parvis. . . . in pratis & pascuis."—Ray Cat. 141.

Avena pubescens Huds. ed. 1, 42 (1762). **1688.** "In pascuis circa ædes Comitis Cardiganiæ ad Twitnam Middlesexiæ vicum."—Ray Hist. ii. 1910.

A. pratensis L. Sp. Pl. 80 (1753). **1688.** "Gramen avenaceum montanum spica simplici aristis recurvis . . . In summis tumulis seu colliculis Bartloviensibus manu quoddam aggestis, in ipso limite agri Essexiensis versus Cantabrigiam inventum ad nos attulit D. Dale."—Ray Hist. ii. 1290.

A. fatua L. Sp. Pl. 80 (1753). **1576.** "Ægylops Bromoides Belgarum. In Anglia . . . inter hordeum et secale nonnusquam occurrit."—Lob. Obs. 21.

(To be continued.)

SHORT NOTES.

Sisyrinchium californicum Dryander in Ireland.—On June 16th, during a brief visit to Wexford, my wife and I worked a considerable portion of the sandhills between Rosslare and Rosslare Point, together with parts of the E. shore of Wexford Haven. In returning, we explored some marshy, rushy meadow-land a mile or more N. of Rosslare Station, and were much surprised to find a yellow-flowered *Sisyrinchium* growing in great plenty over several acres of the wettest part, associated with *Orchis incarnata*, *Eriophorum angustifolium*, *Ranunculus repens*, *R. Flammula*, *Carex distans*, *C. hirta*, *C. flacca*, &c.—no introduced species being observed. The ground has been partially drained, but not cultivated, to all appearances. Expecting that this would prove to be a N.E. American species, I sent living examples to Mr. Britten, who, with Messrs. E. G. Baker and A. B. Rendle, kindly examined them, and found them to agree with the type of *S. californicum*, a plant of California and Oregon. The perianth-segments are about ½ in. long, of a clear, bright, uniform yellow (much as in *Chlora*) when first opened, but fading to orange with brown veins. When found, the blossoms were in the latter state, and they probably expand only in the forenoon; what caught my eye was the sooty-brown, triangular-oblong capsules. I am quite convinced that this plant has not been accidentally introduced, and that, unless a true native, it must have been purposely sown, many years ago. Until quite recently there was no railway to Rosslare (there is none marked in the ordnance-map of 1889), and the only dwellings near, with the exception of Rosslare House, distant about half a mile, are primitive fishermen's or labourers' cottages.—Edward S. Marshall.

Westmorland Brambles.—I collected the following brambles last season in the neighbourhood of Kendal, which have been named for me by Rev. W. M. Rogers:—*Rubus fissus* Lindl. Cunswick Wood.—*R. leucostachys* Schleich. Serpentine Wood, Kendal. —*R. infestus* Weihe. Heversham, and on "the mosses," Low Levens.—*R. mercicus* var. *bracteatus* Bagnall. Serpentine Wood, Kendal. The two last species are, I think, new records for vice-county 69.—C. H. Waddell.

Newbury Casuals.—*Caucalis latifolia* and *C. daucoides* were met with by Mr. H. Weaver and myself on some waste ground near the Newbury Goods Station on June 7th last. Only one example of each occurred. Growing near at hand were *Medicago denticulata*, *Galium tricorne*, and *Centaurea solstitialis*, the latter having appeared in this locality for two seasons in succession. These plants, of course, only occurred as casuals. Two or three plants of *Sisymbrium pannonicum* were observed at Enborne last year, growing near a gravel-pit, and having probably been introduced with other seeds.—A. B. Jackson.

[The occurrence of solitary examples of introduced plants is hardly worth recording.—Ed. Journ. Bot.]

Sagina Reuteri Boiss.—Mr. Druce, in this Journal for 1894, pp. 183–4, records the occurrence, in the brickwork (of the platform) of Malvern railway-station, of this plant. It was first gathered there in 1889. I have carefully searched for specimens elsewhere in this neighbourhood, but without success, until a few days ago, when I again met with it in some quantity, among the brickwork of the platform at Foregate Street Station, Worcester, distant some 7½ miles from the other habitat, but upon the same line of railway. This confirms my belief that it was introduced with the ballast employed to make these platforms, when the railway was constructed, about thirty-eight years ago. The ballast may have been brought from Cardiff, or some port having communication with Spain.—Richard F. Towndrow.

South Hants Plants.—Mr. Townsend in his *Flora* rejects *Campanula Rapunculus* L. for S. Hants as improbable, on the ground that the stations from which *C. Rapunculus* and *C. patula* are reported are in the same immediate neighbourhood, only one to three miles apart; and he inclines to the opinion that *C. patula* is the species that occurs, and that it has been mistaken for *C. Rapunculus.* It seems very likely that one species is the basis of all the records of the two plants; but I can answer for *C. Rapunculus*, having seen it in fair quantity during the summers of 1894 and 1895 on hedgebanks in Avon Tyrrell, at a point which might absorb all the localities given for both species in District II. of the *Flora*, except one for *C. Rapunculus*, "Bisterne, *B. King.*" My observation would go to confirm Mr. Bolton King's naming, and render it probable that there are two stations for *C. Rapunculus*, viz. Bisterne and Avon Tyrrell. Any way, *C. Rapunculus* may stand on record for S. Hants; while the record of *C. patula* does not depend on its occurrence in District II. In the same locality, between Avon Tyrrell and Herne Station occur both *Sparganium ramosum* Huds. and *S. neglectum* Beeby. The latter was published for S. Hants in *Journ. Bot.* 1886, 143. I do not know whether *S. ramosum* as a segregate has been since certified for the vice-county. Does not *Utricularia vulgaris* L. want confirming for this part of Hampshire? I have seen only *U. neglecta* Lehm. in District II.—Edward F. Linton.

Hypnum micans Wils. in Inverness-shire.—I have found the above moss this year on the west coast of this county. It grows in small quantity in a steep ravine about a quarter of a mile from the shore, and 150 ft. above sea-level. Hobkirk's *Synopsis* gives this moss as occurring in the south of Ireland and Borrowdale. Dr. Braithwaite writes me that it was found, he thinks by McKinlay, some years ago in the south-west of Scotland. It is one of the plants given in Wallace's *Island Life*, ed. 2, as not occurring in Europe otherwise than in the British Isles. The Rev. H. G. Jameson, to whom I sent a specimen, has verified the name.—Symers M. Macvicar.

New Carmarthenshire Records.—During a walk in Carmarthenshire upon June 1st, I found *Silene maritima* With. and *Sedum* *roseum* Scop. abundantly upon the cliffs of the Carmarthenshire Van.—AUGUSTIN LEY.

LUZULA PALLESCENS Besser IN GREAT BRITAIN.—My attention was attracted by a wood-rush closely resembling *L. erecta* Desv., but differing from ordinary forms of that plant in the silvery-white heads and the perfectly obtuse capsule. Mr. Arthur Bennett informs me that it is *L. pallescens* Besser (*Juncus pallescens* Wahlenberg, *Fl. Lapponica*, 87). Whether it is to be regarded as a variety or subspecies under *L. erecta* Desv. I do not know; but, besides the difference of colouring, the capsule appears to me to differ materially from that of *L. erecta* in shape. I found it growing sparingly in a shady hill-side wood near Presteign, Radnorshire, June 17th, 1896. —AUGUSTIN LEY.

SALVIA GLUTINOSA IN GLOUCESTERSHIRE.—Mrs. Hartshorne, of the Manor House, Lower Slaughter, Bourton-on-the-Water, sent a specimen of the above-named plant to be named. In answer to enquiries she wrote:—"We found it by the side of the high road, in the hedge close to a low stone wall, with a cornfield on the other side; there are two large clumps of it, and we have found it there for the last three years; there is no trace of any cottage or house ever having been near, nor do the village people remember one."—JAMES BRITTEN.

DRYAS OCTOPETALA IN Co. ANTRIM.—Among some plants which I gathered in 1884 at the Sallagh Braes, in Co. Antrim, and which had got astray among my papers, I have recently found a specimen of *Dryas octopetala*. This discovery is interesting, as the only record of this plant from Co. Antrim is in Mackay's *Flora Hibernica* (1836), without any locality being mentioned, *viz.* "County Antrim, *Mr. Templeton*"; on which the editors of the *Flora of the North-east of Ireland* (1888), p. 48, remark, "In *Flora Hibernica* Mr. Templeton is erroneously credited with finding this plant in Antrim." I have since heard from my friend Mr. Stewart, the surviving editor, that neither he nor his coadjutor the late Mr. Corry found in Templeton's MSS. any note of *D. octopetala* in Antrim, hence their reason for doubting the correctness of the statement in the *Flora Hibernica*. Mr. Stewart has seen my plant, which has come as a surprise to him. He has often searched the Sallagh Braes, but as my plant is an old barren one, it was probably overlooked from its habit in such a condition of creeping close to the ground and resembling *Salix repens*. To me it is very satisfactory to be able to verify Mr. Templeton's record.—H. W. LETT.

ROSA STYLOSA Desv. IN S. HANTS (pp. 135, 319).—If confirmation of this record is needed, I may quote the opinion of the Rev. W. Moyle Rogers:—"*Rosa stylosa* Desv. This is what (after N. E. Brown) I now consider the typical plant, and these are the first specimens that I have seen besides my own S. Wilts ones."—EDWARD J. TATUM.

EXCHANGE CLUB FOR MOSSES AND HEPATICÆ.—In reply to Mr. H. N. Dixon's remarks (p. 135) on the danger of Exchange Clubs tending to exterminate rare species, may I say that the following rule has been drawn up for the Moss Exchange Club:—"Great care should be taken not to injure or exterminate any rare or local species. If a plant only occurs sparingly, not more than one or two specimens should be taken. Often a whole tuft (*e.g.* of *Sphagnum*) is destroyed, whereas greater care might have obtained a specimen and left the original tuft little the worse. Localities near towns or where there is any danger of a rare species being exterminated should not be too definitely published." One often sees ironical remarks in Reports of Exchange Clubs on account of the small number of specimens sent. It would be well also to caution beginners against taking too many in the case of a rare species. —C. H. Waddell.

NOTICES OF BOOKS.

Monographie der Gattung Euphrasia. Von Dr. R. v. Wettstein. 4to, pp. 316, tt. xiv, 3 maps. Leipzig, Engelmann. 1896. Price 30 marks.

In this very complete and excellent monograph Dr. R. v. Wettstein has given the history, nomenclature, physiology, and biology of these closely-allied species in a most thorough and painstaking manner. The descriptions of the eighty-seven species are very clear, and the difficulty of diagnosing the critical forms is much lessened by the clavis, and by the excellent drawings of the calyx, flowers, &c., which are to be found on the clearly-engraved plates. Eleven of the species are stated to be found in Britain; they are as follows:—

E. stricta Host, *Flora Austr.* ii. 185, which is figured as *E. officinalis* in Hayne, *Arzn.* ix. t. 8. It is the *E. nemorosa* Reichb. *Fl. Exc.* 358 (not of Persoon), the *E. officinalis* var. *nemorosa* Koch, *Syn. Fl. Germ.* 545, and the *E. officinalis* var. *vulgaris* Benth. in DC. *Prod.* x. 552. Of this species Dr. Wettstein has seen specimens from the Surrey Downs.

E. borealis (Townsend, as a var. of *E. Rostkoviana*) Wettstein, which was described as British by Mr. F. Townsend from Braemar specimens, and is recorded from the Faroe Islands by Dr. Wettstein. The writer has gathered it in Argyll, Ross W. and E., Easterness, Westerness, Perth, and Sutherland; and at Kenmare and Portmarnock in Ireland.

E. brevifolia Burnat et Gremli; Towns. in *Journ. Bot.* 1884, 167. This is, according to Dr. Wettstein, the *E. officinalis* var. *montana* Fries, *Summa Veg. Scand.* i. 19. Mr. Townsend sent Dr. Wettstein specimens of it from Buxton, from Foyers (Inverness-shire), and from Argyll. Dr. Richter is stated to record it from the "Drosachs" (the Trosachs in Perthshire).

E. nemorosa Pers. *Syn.* ii. 149. This is reported from "Hornington" (Honington), Warwickshire, *F. Townsend;* Portland, *Groves;* Wokingham (Berkshire), and York. It is a frequent form in Berkshire and Oxfordshire, and the writer has it also from Bucks, Hants, Surrey, and Northamptonshire.

E. CURTA Fries (*Nov. Fl. Suec.* ed. 2, 198, as a variety); Fries, *Summa Veg. Scand.* i. 195 (1846). Occurs in the Isle of Wight, on Freshwater Downs and Catherine's Cliff; Moreton, Warwickshire, *F. Townsend;* and in Aberdeenshire, *Marshall.*

E. LATIFOLIA Pursh, *Fl. Am. Sept.* ii. 430, which is figured in *Flora Danica*, n. 2910, is recorded from "Cumberland (*H. Kern.*) (*Taylor; H. Hofm.*)," but no more precise statement of its occurrence in Britain is given.

E. FOULAENSIS Towns. in sched. is the form found by Mr. Beeby in Foula, Unst, &c., in the Shetland group; it also occurs in the Faroe Islands.

E. GRACILIS Fries, *Fl. Halland.* 104 (1818) as a var. and as a species in the *Summa Veg. Scand.* i. 198 (1846). Throughout the monograph Dr. Wettstein follows the continental school of nomenclature which tries to ensure the permanency of the trivial name. The oldest name which should be accepted, according to our British plan, is *E. micrantha* Reichb. *Fl. Germ. Exc.* 358 (1831–2). This plant is recorded for Aberdeen, Inverness, and Argyll, on the authority of specimens from F. Townsend and Nicholson. The writer has it from Ross, Perth, Oxford, and Berkshire.

E. SCOTTICA Wettstein = *E. paludosa* Towns. *Journ. Bot.* 161 (1891), not of R. Brown. This plant is only recorded from Braemar, where it was originally found by Mr. F. Townsend growing in a marshy place with sedges. It also occurs in Argyll and Westerness.

E. ROSTKOVIANA Hayne, *Arzn.* ix. t. 7 (1823), is figured in Syme, *E. B.* 991. It is given from Buxton, Derbyshire; Rosthwaite, Cumberland; Oban, Argyll, by F. Townsend; and for Caithness by Linton.

E. KERNERI Wettstein in Engler & Prantl, *Nat. Pflanz.* iv. 101 (1893), is given for Chelsham, Croydon, by Bennett.

Several hybrids are described, but of these only one is recorded from Britain, namely, *E. Rostkoviana* × *nemorosa* Towns. = *E. glanduligera* Wettst., which was found at Buxton by Mr. Townsend.

There are fourteen plates, two of which are devoted to the histology and morphology of the genus, four others contain nearly 500 figures of parts of the flower, calyx, and bracts, while the remainder illustrate the various species from reproduced photographs of herbarium specimens. Four charts show the geographical distribution, &c., of some of the species of the genus. This work can be cordially recommended to the systematist.

G. CLARIDGE DRUCE.

A Manual of Botany. By J. REYNOLDS GREEN, Sc. D., F.R.S., F.L.S. Vol. II.—Classification and Physiology. London: J. & A. Churchill. 1896. Pp. xi, 541. Price 10s.

THIS second volume in every way confirms the opinion we expressed of the first.[*] It is very unequal, the part dealing with physiology being immeasurably better than the part given up to classification. This is the fault not so much of Prof. Green as of the traditional system. Because the stodgy old type of Manual (to which Bentley's and Henfrey's belong) contained a condensed account of the characters of the groups and orders of plants, of very little service to anyone, Prof. Green has been at infinite pains to give us such accounts in which he exhibits the width of his reading and minute care in his selection of facts. It is good work thrown away for the greater part. Such details are right and proper in a special book on a particular group, but surely out of place in a general manual. From a book like Oliver's *Lessons* it is but a step to the use of a Flora such as Bentham's, and it is a pity to erect a barrier of such density between them. Prof. Green, we are confident, would never have invented such pemmican as he here offers for bread—it is an outcome of the miserable old tradition that Botany was to be taught in the most repellent way possible. We are sure he would never have invented it, because the physiology is treated in such a different way. By-the-bye, fig. 831 certainly does not represent the haustoria of the potato-disease fungus; and, speaking of figures, we note that many make two or more appearances in the course of the work.

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[*] See *Journ. Bot.* 1895, 283.

Turning from these complaints to meet Prof. Green on his own particular ground, the physiology of plants, it is difficult to avoid words of praise that will not be called extravagant. There is nothing so good, so simple, and so valuable in every way in our language, and certainly no German could ever find it in his heart to write with such brevity and lucidity on plant physiology. So thoroughly good is it that we recommend the publishers to issue it separately as an Elementary Physiology. Where all deserves this praise, and all is so well sustained, it is difficult to point to anything of special merit; but Chapter V., which is introductory to the subject of the food of plants, is a capital example of clear writing and lucid exposition of a subject always difficult for the elementary student.

Taking the *Manual* as a whole, it is an excellent investment for the university or college student. It is carefully and honestly done by a man of almost unique experience in the requirements and methods of our teaching establishments, and of excellent judgment as to what ought to be taught.

G. M.

Die Vegetation der Erde. Sammlung pflanzengeographischer Monographien, herausgegeben von A. Engler und O. Drude. I. Grundzüge der Pflanzenverbreitung auf der iberischen Halbinsel von Moritz Willkomm. 8vo, pp. xiv, 395, with 21 figures in the text, 2 photogravures, and 2 maps. Leipzig: Engelmann. 1896. Price 12 m.

If corresponding areas of the earth were treated with the same exhaustiveness as has been the south-west peninsula of Europe by Moritz Willkomm, the series, of which the present is the opening volume, would be an extensive one, Such, however, is not the intention of the editors; special attention will be given to the plant-formations of Europe and neighbouring provinces. As Professors Engler and Drude point out in their preface, we undoubtedly want general works on the physiognomy of the vegetation of individual areas, its composition and relationships. They also recognize the difficulties in the preparation of such works. Travellers' accounts are too superficial or one-sided, and systematic plant-lists too crude to give a fair idea of the plant-life of a country. This can only be done by long and careful work in the field, with the assistance of a good herbarium. We hope the editors will secure as capable an exponent of other provinces as they have in the present instance, to which moreover a sad interest attaches. Moritz Willkomm died in September last, while his book was going through the press.

The whole work is to be divided into three sections. The first will be devoted to general chapters of plant-geography, or "climatology in its influence on plant-distribution, history of development of floras, and phylogenetic investigations on geological and biological bases." The second will consist of monographs on "plant-formations, especially those of Europe and neighbouring provinces." The third section, of which the present work is the first instalment, deals with the principles of plant-distribution by means of monographs illustrating "natural floral provinces."

Dr. Willkomm's book opens with an account of the history and literature of the botanical investigation of the peninsula. Ancient writers tell us next to nothing of the original vegetation; Strabo mentions the esparto-grass between Saguntum and Setabis, but, except for a few such references to striking or useful plants, we are limited to indirect evidence. From this we know that woods have disappeared from mountains and covered areas which were originally bare of trees. The first scientific exploration was that of Charles de l'Ecluse (Clusius), who in 1560 and 1564–65 visited Valencia, Murcia, Andalusia, Estremadura, Portugal, and Castalia, and in 1576 published at Antwerp the result of his travels in his *Rariorum Stirpium per Hispanias observatarum Historia*. In 1646 Jacob Barrelier travelled through several provinces, the results of which were not printed till 1714, after his death. Between 1681 and 1689 Tournefort made three journeys, the third of which was an extensive one; the list of the numerous plants collected or observed in this last journey was never published, and for a long time was almost unknown. The historical account occupies twenty-three pages, and brings us down to the issue of the *Supplementum Prodromi Floræ Hispaniæ* of 1894. The remainder of the subject-matter falls into two parts and an appendix.

Part I. is entitled "Distribution of Vegetation-Formations on the Iberian Peninsula," and occupies two chapters. The first is a sketch of the physical geography; the second deals with the distribution of individual plant-formations in zones and regions. Of the 148 families of seed-plants, *Compositæ*, *Papilionaceæ*, *Gramineæ*, *Cruciferæ*, *Labiatæ*, *Umbelliferæ*, *Caryophyllaceæ*, and *Scrophulariaceæ* come first with 766, 532, 439, 318, 288, 240, 220, and 219 species respectively. The high position of *Labiatæ* is characteristic; in the

French-Belgian-Swiss flora it comes tenth with 147 species. An important biological feature is the preponderance of perennials, which comprise more than two-thirds the number of vascular plants. Among the woody plants are numerous shrubby members of the *Chenopodiaceæ*, especially of the groups *Salsolaceæ* and *Salicornieæ*. Of the 2878 perennials, 148 species are bulbous and 100 tuberous. There are 64 vascular water-plants, and 115 saprophytic, parasitic and insectivorous species, the last-named including the monotypic endemic genus *Drosophyllum*. The composition of the flora is as follows:—Central European species, 1633; French (not including Pyrenean), 215; Pyrenean (and not found in the Alps), 188; plants of the Central European Alps and high mountains, 236; Mediterranean, 1132; South Atlantic, 185; North African, 282; plants of Atlantic islands, 16; Oriental, 40; Central Asiatic, 8; endemic, 1465; cultivated, &c., 260; making altogether 5660 species.

The second part contains a somewhat exhaustive account of the vegetation of the different botanical districts of the peninsula, namely, the Pyrenean, the North Atlantic, the Central, the Mediterranean, the South Atlantic, and the West Atlantic. The Appendix gives a short account of the alterations which have been produced in the vegetation by cultivation and commerce, from the time of the invasion by the Arabs in the eighth century, bringing several species of corn (*Triticum Cevallos* Lag., *T. fastuosum* Lag., and perhaps *T. durum* Desf.) onwards. It concludes with a list of the plants now cultivated, and also one of those exotic species which have become naturalized and now spread over considerable areas. A notice of this excellent work would be incomplete without a word of praise of the two maps, one illustrating rainfall, the other vegetation-lines; both are models of clearness.

A. B. Rendle.

ARTICLES IN JOURNALS.

Annals of Botany (June).—G. Brebner, 'Prothallus and embryo of *Danæa simplicifolia*' (1 pl.).—G. Massee, 'Revision of *Coprinus*' (2 pl.).—R. W. Phillips, 'Development of cystocarp in *Rhodomelaceæ*' (2 pl.).—A. C. Seward, 'Geological History of Monocotyledons' (1 pl.).—W. B. Hemsley, 'Flora of Lord Howe Island.'

Bot. Centralblatt (Nos. 20, 21).—K. Friderichsen, '*Rubus Schummelii* Whe.'—K. von Flatt, 'Das seltenste typographische Product Linné's' [see p. 359]. — (Nos. 22, 23). E. Heinricher, 'Ueber pflanzenbiologische Gruppen.' — P. Magnus, 'Bemerkungen zu Dr. G. Lagerheim's Abhandlung: Uredineæ Herb. E. Fries.'—(No. 24). C, Rosenberg, 'Die Stänke der Pflanzen in Winter.'—F. v. Mueller, *Burtonia simplicifolia*, *Grevillea Helmsiana*, spp. nn.—(No. 25). A. Cogniaux, *Macairea Theresiæ*, sp. n. —(No. 27). W. Maxwell, 'The Growth of Banana-leaves.' — A. Garcke, 'Zwei Ersatzblätter in Linné's Species Plantarum, ed. 1.' — (Nos. 28, 29). J. Wittlin, 'Ueber die Bildung der Kalkoxalat-Taschen' (1 pl.).

Bot. Gazette (May 20). — G. E. Davenport, 'Filices Mexicanæ' (1 pl.). — C. Robertson, 'Flowers and Insects.' — M. L. Fernald, '*Aster tardiflorus* and its forms.' — D. T. MacDougal, 'Root-tubers of *Isopyrum occidentale*.'—G. F. Atkinson, 'Albert Nelson Prentiss' (portr.).—J. N. Rose, '*Tradescantia micrantha*' (1 pl.).—(June 17). R. Thaxter, 'New or peculiar aquatic fungi' (*Araiospora*, gen. nov.: 3 pl.).—W. R. Shaw, '*Sequoia sempervivens*' (1 pl.).—G. D. Chester, '*Nemalion multifidum*' (2 pl.). — G. B. Uline & W. L. Bray, 'N. American *Amarantaceæ*.'— T. Holm, 'Anatomical characters of N. American *Gramineæ*' (1 pl.). — J. G. Smith, 'American species of *Ctenium*' (1 pl.).—W. Maxwell, 'Growth of Banana-leaves.'

Bot. Zeitung (May 16). — C. Wehmer, 'Die Eichenblättrigkeit der Hainbuche in ihrer Beziehung zur Hexenbesenbildung (= *Exoascus*-Erkrankung).'—(June 16). W. Benecke, 'Die Bedeutung des Kaliums und des Magnesiums für Entwickelung und Wachsthum des *Aspergillus niger* sowie einiger anderer Pilzformen.'—(July 16). F. Hildebrand, 'Ueber die eigenthümliche Haarbildung auf den Knollen einiger Arten von *Cyclamen*.'

Bull. de l'Herb. Boissier (April, May). — J. Daveau, 'La flore littorale du Portugal.' — (April). A. Chabert, 'La viviparisme.'— R. Chodat, '*Polygalaceæ*' (4 papers).— Id., 'Sur les mycorrhizes du *Listera cordata*.'— Id., 'Protococcoidées.'—G. Schweinfurth, 'Sammlung Arabisch-Æthiopischen Pflanzen.'—(May). G. Gaillard, '*Rosa alpina* × *rubrifolia*.'—J. Briquet, *Brunonia*.—Id., *Zombiana africana* Baill.—Id., *Verbenaceæ* novæ.—Id., '× *Bupleurum Guineti* (*B. ranunculoides* × *B. longifolium*).' — A. M. Roubier, 'L'inflorescence des Cuphées alterniflores.'—G. Hochventiner, 'Tératologie du *Narcissus radiiflorus*.'— A. Chabert, *Leontopodium*. — A. de Coincy, *Centaurea maroccana*.—(June). E. Levier, 'La pseudo-priorité et les noms à béquilles.' — H. Schinz, 'Beiträge zur Kenntnis der Afrikanischen Flora' (*Distegia* Klatt, gen. nov. (Compositæ, Ambrosieæ); *Symphipappus* Klatt (Inuloideæ); *Dolosanthus* Klatt und *Monactinocephalus* Klatt (Mutisiaceæ)). — F. W. Klatt, 'Amerikanische Compositen' (*Lepidesmia*, gen. nov.).

Bull. Bot. Soc. France (xliii. 3: May). — E. Drake del Castillo, *Balansæphytum*, gen. nov. (Artocarpeæ: 1 pl.). — P. v. Tieghem, *Korthalsella*, gen. nov. (Loranthaceæ). — C. Degagny, 'Sur la division du noyau cellulaire.' — D. Clos, 'Genres botaniques de Lamarck.'—A. Deflers, 'Plantes nouvelles de l'Arabie.'—E. Henry, 'Le tannin dans le bois.'—F. Gagnepain, 'Sur un hybride artificiel des *Lychnis diurna* et *vespertina*.'—A. Chatin, 'Truffes de Mesrata.' — R. Joffé, 'Sur la fécundation des Bangiacées' (1 pl.). — (June). P. van Tieghem, 'Sur quatre tribus des Loranthacées.'—C. Duval, 'Introduction du Platane en France.' — M. Gandoger, 'Voyage botanique aux Picos de Europa.' — A. Deflers, 'Plantes nouvelles de l'Arabie.'

Erythea (July).—A. J. Merritt, 'Pollination of some Californian flowers.' — J. B. Davy, '*Calypso borealis*.' — H. E. Hasse, 'Lichens of Los Angeles.'

Gardeners' Chronicle (June 20).—*Oncidium Godseffianum* Kränzl., sp. n. — (July 18). *Epidendrum xipheroides* Kränzl., *Cyrtochilum micranthum* Kränzl., spp. nn.

Journal de Botanique (June 1). — C. Sauvageau, *Ectocarpus fulvescens.* — (June 1, 16). A. Franchet, 'Les *Aletris* asiatiques.' —(June 16, July 1). P. Hariot, '*Pilonema.*'—E. Drake del Castillo, Urticacées du Tonkin. — (July 1). H. de Boissieu, 'Contribution à la connaissance du littoral Saharien.' — —. Hue, 'Lichens de la Savoie' (Herb. J. J. Perret).'—(July 16). H. Lecomte, *Thonningia sessilis*, sp. n. (1 pl.).—L. Vidal, 'Sur les substances pectiques dans la racine des *Equisetum*.'

Journ. Linn. Soc. (Bot.: no. 217: July 8). — A. J. Ewart, 'On Assimilatory Inhibition in Plants.'

Oesterr. Bot. Zeitschrift (July). — F. v. Mueller & E. Hackel, *Schizostachyum Copelandi*, sp. n.—F. Matouschek, 'Zwei neue *Petasites*-Bastarde aus Böhmen' (1 pl.). — F. Arnold, 'Lichenologische Fragmente.'—P. Ascherson, *Equisetum maximum.*

BOOK-NOTES, NEWS, &c.

Dr. Gregory's account of his travels in East Tropical Africa forms a handsome book—*The Great Rift Valley*—and contains much information and many notes upon the botany of the region traversed by him. The appendix includes a list of the plants collected by him, so far as at present determined—for the most part by the officers of the Botanical Department of the British Museum; the novelties, as our readers will remember, have been described in this Journal. The arrangement of the list is somewhat odd, the authority for each name being dissociated from it and placed in a column by itself; thus,

"Species.	Author.	Locality.
Ethulia conyzoides	L.	"

It may be well to call attention to the fact that the *Cyperaceæ*, elaborated by Mr. C. B. Clarke, do not appear among the monocotyledons, but form a "part" by themselves, coming after the Fungi: the novelties, which appear as *nomina nuda*, were described by Mr. Clarke in this Journal for May last, too late to be included in the useful "list of literature" relating to his expedition which Dr. Gregory gives in an appendix. An enumeration of the freshwater Algæ collected during the expedition, by Messrs. W. and G. S. West, will appear in an early number of this Journal.

Dr. Gregory comments on the absence of scientific literature on British East Africa, and points out our inferiority to Germany in this respect. "The only work on Tropical Africa in English that can compare with these [German works] in scientific accuracy is *The Flora of Tropical Africa*, the last part of which was published in 1877; but this barely mentions British East Africa." It is little to our credit that nearly twenty years should have elapsed without any attempt being made to complete this *Flora*; but, notwithstanding official pressure and repeated promises, its continuation seems as far off as ever, although the necessity for a Tropical African flora becomes more and more pressing every year. It is to be regretted that the energy which is so conspicuous in certain departments of work at Kew Gardens does not extend to the publications for which that establishment is responsible.

We have already briefly referred (p. 239) to the continuation of the *Flora Capensis*, which, after remaining for thirty-one years in abeyance, has at last seen the light. This sixth volume begins the Monocotyledons, vols. iv. and v. being left for the completion of the Dicotyledons. The most noteworthy feature of this instalment—which, save for the short introductory note by Dr. Dyer, is entirely the work of Mr. J. G. Baker—is the small number of novelties it contains: in the 192 pages we note only eleven new species, four of which belong to *Hypoxis*. The breaking up of the area into somewhat arbitrary regions is a perhaps desirable innovation on the preceding volumes; we regret that the opportunity was not taken of omitting the brackets in which the authority for each name is placed—"G. ochroleucus (Baker in Journ. Bot. 1876, 182)"—as this mode of printing is now seldom employed, and indeed has a somewhat different signification. The recent Kew plan of printing adjectival names derived from persons with a small letter—"forsythiana"—which is in direct defiance of the Decandollean "Laws" as well as contrary to general practice, has, we regret to see, been adopted: for this we presume Dr. Dyer is responsible, notwithstanding his dictum (see p. 114) that "changes should never be insisted on without grave and solid reason."

We are glad to find that our surmise as to the extinction of *Erythea* (see p. 280) was incorrect, as we have since received the monthly numbers—some of them very small ones—up to July of the present year. These contain notes and novelties of varied interest, as well as examples of the amenities of controversy as conducted by our transatlantic friends. The editor notes that "the Editor of the London *Journal of Botany* [is there any other periodical bearing this title?] has had nothing to say for several months about 'Neo-American' nomenclature." This is an error; we have had plenty to say, although we have not said it. When American botanists show some signs of agreement among themselves, we shall be prepared to discuss their decisions. Meanwhile Mr. Jackson's note in our present issue will show that the subject is not lost sight of.

The copy of Rees's *Cyclopædia* on which Mr. Jackson's notes, printed on pp. 307–311, were based, has been presented by him to the General Library of the Natural History Museum.

Messrs. Marcus Ward & Co. have published in a neat portfolio forty coloured pictures of some common *Plants of Manitoba*. There is no letterpress beyond a list of the species figured, and it is not easy to see the object of the publication, nor to discover to whom such a collection will be of use, although, as such things go, it is not dear at half-a-guinea. No author's name is associated with the work.

ALGÆ FROM CENTRAL AFRICA.

By W. West, F.L.S., and G. S. West, A.R.C.S.

(Plate 361.)

The small collection of Algæ which forms the subject of this paper was made by Dr. J. W. Gregory during the expedition to Mount Kenya in 1893. The gatherings were not very rich, but proved to be most interesting; they were as follows:—

1. Inkuyuni, Kamassia (from rocks in river). Camp no. 63, Coll. no. xxiv. 30th May, 1893.
2. Lake Losuguta (water with sulphides). Camp no. 51, Coll. no. xxv. 16th May, 1893.
3. Lake Baringo (mud with diatoms). Coll. no. xxx. May, 1893.
4. G. Laschan, Leikipia. Camp no. 71, Coll. no. xxxviii. June 13th, 1893.
5. Mwangadan River, S. of Fuladoga.

The last one consisted of a mass of dried algæ in paper, and on soaking out yielded many species. Of the other four, which were in tubes, no. 4 was the only one which was not thoroughly dry, the corks of the others being almost entirely demolished by beetles. From no. 5 several zygospores of a desmid were seen (diam. c. spin. 43 μ), but, as no semicells were attached to them, these could not be determined.

Œdogoniaceæ.

1. Œdogonium sp. Crass. cell. veget. 6·5–7·5 μ; longit. 5–6-plo major. Mwangadan River, S. of Fuladoga.

2. Œ. sp. Crass. cell. veget. 13·5–15 μ; longit. 2½–4-plo major. G. Laschan, Leikipia.

Confervaceæ.

3. Cladophora crispata (Roth) Kütz. *Phyc. Gener.* 264; Wolle, *Freshw. Alg. U. S.* 126, pl. cix. f. 4–10; Cooke, *Brit. Freshw. Alg.* 143, pl. 55, f. 3. Crass. fil. 29–42 μ. Mwangadan River, S. of Fuladoga.

Ulotrichaceæ.

4. Hormiscia subtilis (Kütz.) De Toni, *Syll. Algar.* 159. *Ulothrix subtilis* Kütz. *Phyc. German.* 197; Rabh. *Flor. Europ. Alg.* iii. 365.

Var. variabilis (Kütz.) Kirchn. *Alg. Schles.* 77. *Ulothrix variabilis* Kütz. *Species Algar.* 346; Rabh. *Fl. Europ. Alg.* iii. 365. Crass. fil. 5–6 μ. Mwangadan River, S. of Fuladoga.

Zygnemaceæ.

5. Spirogyra arcta (Ag.) Kütz. *Tab. Phyc.* v. t. 21; Rabh. *Fl. Eur. Alg.* iii. 239. Forma cellulis fructiferis non inflatis. Crass. cell. veget. 34–38 μ; longit. 1½-plo major; long. zygosp. 48–50 μ, lat. zygosp. 27 μ. Inkuyuni, Kamassia.

6. S. setiformis (Roth) Kütz. *Species Alg.* 442; Rabh. *Fl. Eur.*

Alg. iii. 246. Crass. cell. veget. 108–125 μ; long. zygosp. 141–154 μ, lat. zygosp. 100–111 μ. Mwangadan River, S. of Fuladoga.

7. S. TERNATA Riparti in *Bull. Bot. Nat. Fr.* tom. xxiii. 1876, 162; Petit, *Spirog. Envir. Paris*, 26, t. viii. figs. 4–7. Crass. cell. veget. 54–57 μ; longit. 1–2½-plo major; crass. cell. fruct. usque 75 μ; long. zygosp. 78 μ, lat. zygosp. 48–54 μ. Inkuyuni, Kamassia.

The diameter of the filaments and the dimensions of the zygospores are a trifle small for this species, and come near those of *S. neglecta* (Hass.) Kütz., but as nearly all the fructiferous cells are abbreviated and fairly inflated, it evidently belongs to *S. ternata*. The latter species seems to have been separated only on account of its more inflated and abbreviated fructiferous cells.

8. S. DUBIA Kütz. *Tab. Phyc.* v. t. 24; Rabh. *Fl. Europ. Alg.* iii. 243; Wolle, *Freshw. Alg. U. S.* 220, pl. cxxxv. f. 11–12. Crass. cell. veget. 43–48 μ; long. zygosp. 57–58 μ, lat. zygosp. 38–41 μ. G. Laschan, Leikipia.

DESMIDIACEÆ.

9. CLOSTERIUM LEIBLEINII Kütz. Synops. Diatom. in *Linnæa*, 1833, 596; Ralfs, *Brit. Desm.* 167, tab. xxviii. fig. 4. Lat. 18 μ. Inkuyuni, Kamassia.

10. C. LITTORALE Gay, *Essai Monog. Conj.* 75, t. ii. fig. 17; Note sur les conj. mid. France, *Bull. Soc. Bot. France*, 1884, 339.

Var. CRASSUM, n. var. (Fig. 18). Var. cellulis multe crassioribus. Long. 218 μ; lat. 31 μ. Inkuyuni, Kamassia.

The "*Closterium Leibleinii?* forma" described and figured by Borge (Süssw. Chlor. Archangel, *Bihang till R. Svenska Vet.-akad. Handl.* Band 19, 1894, 16, figs. 9, 10) belongs rather to *C. littorale* Gay than to *C. Leibleinii* Kütz.

11. EUASTRUM VERRUCOSUM Ehrnb.; Ralfs, *Brit. Desm.* 79, tab. 11, fig. 2. Long. 71 μ; lat. 69 μ; lat. isthm. 16 μ. Mwangadan River, S. of Fuladoga.

12. E. SPINULOSUM Delp. *AFRICANUM Nordst. *De Alg. et Char.* i. 9, t. xvi. fig. 16. Long. 68, 79, 70, 71, 77 μ; lat. 63·5, 64, 61, 61, 63 μ; lat. isthm. 14·5, 15, 14·5, 15·5, 16 μ; crass. 38·5, 35 μ. Mwangadan River, S. of Fuladoga.

13. **E. hexagonum**, nov. sp. (Fig. 10). E. submediocre, 1⅕-plo longius quam latum, medio profundissime constrictum, sinu angusto-lineari extremo ampliato; semicellulæ subtrapezicæ, angulis rotundatis, lateribus biundulatis, elevationibus basalibus majoribus, apicibus retusis in medio, elevationibus granulatis, in medio ad basin cum annulo granulorum majorum 7–8 circa granula 3 centralia; a vertice visæ oblongo-ellipticæ, ad medium utrobique tumidæ; a latere visæ pyramido-ovatæ, tumore basali utrobique. Long. 48, 48·5, 53, 49 μ; lat. 40, 40, 46, 40 μ; lat. isthm. 10, 10·5, 13, 9·5 μ; crass. 22, 22·5, 24, 21 μ. Mwangadan River, S. of Fuladoga.

This may be compared with *Cosmarium alatum* Kirchn. (*Alg. Schles.* 153) and its var. *gostyniense* Racib. (*Nonn. Desm. Polon.* 17, tab. xi. fig. 17), from which it differs in being twice as large, in having fewer and larger granules, and in its different apex.

14. COSMARIUM PECTINOIDES Wolle, *Desm. U. S.* 88, pl. xiv. figs. 12–13. Long. 57 μ; lat. 43 μ; lat. isthm. 15 μ; crass. 27 μ (Fig. 9). Mwangadan River, S. of Fuladoga.

The nearest species to this is *C. binum* Nordst. in Wittr. & Nordst. *Alg. Exsicc.* 1880, no. 383, which differs chiefly in its linear sinus, its rectangular basal angles, and its truncate apex. The close resemblance between these two species seems to have escaped the notice of some previous observers who have had occasion to refer to *C. binum.*

15. **C. Mwangadanense**, nov. sp. (Fig. 11). C. submediocre, 1⅕-plo longius quam latum, profunde constrictum, sinu lineari extremo subampliato; semicellulæ subsemiculares cum apicibus truncatis, angulis basalibus rotundatis, lateribus leviter biundulatis, elevationibus granulatis, granulis intra marginem subter elevationibus, in centro cum tumore magno granulorum majorum; a vertice visæ latæ ellipticæ, cum tumore ad medio utrobique. Long. 49 μ; lat. 41 μ; lat. isthm. 11·5 μ. Mwangadan River, S. of Fuladoga.

The isolated patches of granules of this species are very characteristic.

16. C. SUBCOSTATUM Nordst. in Wittr. & Nordst. *Alg. et Œdog. in Ital. et Tyrol.* 37, taf. xii. fig. 13.

Forma MINOR (Fig. 15). Forma minor, crenis lateralibus paucioribus. Long. 21·5–23 μ; lat. 18–19 μ; lat. isthm. 4·2–4·8 μ; crass. 11·5 μ. Mwangadan River, S. of Fuladoga.

17. C. BLYTTII Wille, *Bidrag til Kundsk. om Norges Ferskv. Alg.* 25, tab. i. fig. 7. Long. 21 μ; lat. 19 μ; lat. isthm. 6 μ. G. Laschan, Leikipia.

18. C. PUNCTULATUM Bréb. var. ORNATUM Istv. Schaar. Diag. Algar. Nov., *Notarisia*, 1886, 237. Forma cum granulis radiatim dispositis. Long. 21 μ; lat. 18 μ; lat. isthm. 6 μ. Mwangadan River, S. of Fuladoga.

19. C. PHASEOLUS Bréb.; Ralfs, *Brit. Desm.* 106, tab. 32, fig. 5. Long. 27 μ; lat. 26 μ; lat. isthm. 7·5 μ; crass. 14·5 μ. Mwangadan River, S. of Fuladoga.

20. **C. trochiscum**, nov. sp. (Fig. 12). C. parvum, 1⅕-plo longius quam latum, profundissime constrictum, sinu angustolineari extremo ampliato; semicellulæ oblongo-rectangulares, angulis leviter rotundatis, angulis superioribus subincrassatis; a vertice visæ ellipticæ, tumoribus parvis binis ad medium utrobique; membrana glabra. Long. 22·5 μ; lat. 21 μ; lat. isthm. 4·5 μ; crass. 13 μ. Mwangadan River, S. of Fuladoga.

21. C. RECTANGULARE Grun. in Rabh. *Fl. Europ. Alg.* iii. 166. *C. gotlandicum* Wittr. *Om Gott. och Öl. Sötv. Alg.* 60, t. iv. fig. 14.

Var. AFRICANUM, n. var. (Fig. 14). Var. semicellulis multe altioribus, lateribus inferioribus divergentibus, lateribus superioribus longioribus, apicibus angustioribus, isthmo angustiori. Long. 31–35 μ; lat. 24–25 μ; lat. isthm. 6–7·5 μ; crass. 15 μ. Mwangadan River, S. of Fuladoga.

It differs from *C. rectangulare* Grun. var. *Cambrense* (Turn.)

[= *C. gotlandicum* Wittr. v. *Cambrense* Turn. Desmid Notes, *Naturalist*, Nov. 1893, 345, fig. 7] in the different inclination of the inferior lateral margins, the longer superior lateral margins, and the narrower apex.

22. **C. globulatum**, nov. sp. (Figs. 7–8). C. minutum, $1\frac{1}{3}$-plo longius quam latum, profunde constrictum, sinu lineari extremo subampliato; semicellulæ semicirculares angulis basalibus leviter rotundatis; a vertice visæ circulares; membrana crassa, minute punctata. Long. 17 μ; lat. 13·5 μ; lat. isthm. 4·5 μ. Mwangadan River, S. of Fuladoga.

It differs from *C. affine* Racib. (*Desmidya w podrózy na okolo ziemi*, Krakow, 1892, 3, tab. vi. fig. 25) in its deeper constriction, its much narrower sinus, its thicker membrane, and circular vertical view.

23. **C. subvenustum**, nov. sp. (Fig. 17). C. parvum, paullo longius quam latum, subprofunde constrictum, sinu lineari; semicellulæ late truncato-pyramidatæ, angulis rotundatis, lateribus triundulatis, apicibus retusis; a vertice visæ ellipticæ ad medium utrobique tumore præditæ; a latere visæ late pyramido-ovatæ; membrana punctata. Long. 36·5 μ; lat. 32·5 μ; lat. isthm. 15 μ; crass. 22 μ. Mwangadan River, S. of Fuladoga.

This differs from *C. venustum* (Bréb.) Arch. [= *C. Cambricum* Cke. & Wills] in its much broader cells, its broader isthmus, and in the median tumours of the vertical view.

24. **Staurastrum nephroideum**, nov. sp. (Fig. 13). S. parvum, paullo longius quam latum, profunde constrictum, sinu angusto extremo subampliato extrorsum valde aperto; semicellulæ subreniformes, dorso multe convexo; a vertice visæ triangulares lateribus concavis, angulis subtruncatis; membrana subcrassa densissime punctata. Long. 38 μ; lat. 35 μ; lat. isthm. 11·5 μ. Mwangadan River, S. of Fuladoga.

25. **S. subdilatatum**, nov. sp. (Fig. 16). S. parvum, paullo longius quam latum, profunde constrictum, sinu aperto extremo rotundato; semicellulæ elliptico oblongæ, apicibus subtruncatis; a vertice visæ triangulares, lateribus concavis, angulis rotundatis; membrana dense et delicate granulata. Long. 26·5–27·5 μ; lat. 23–25 μ; lat. isthm. 9·5 μ. Mwangadan River, S. of Fuladoga.

This *Staurastrum* appears to be nearest to *S. dilatatum* Ehrnb., from which it differs in being relatively longer in proportion to its breadth, and in having more numerous granules, which are not arranged in transverse series across the angles.

Pediastreæ.

26. Pediastrum Boryanum (Turp.) Menegh.; Ralfs, *Brit. Desm.* 187, tab. 31, fig. 9.

Var. granulatum (Kütz.) A. Br. Forma cellulis periphericis processibus delicatissimis instructis. Diam. cell. peripher. 18–21 μ. Mwangadan River, S. of Fuladoga.

Sorastreæ.

27. Cœlastrum sphæricum Näg. [*C. Nägelii* Rabh. *Fl. Europ. Algar.* iii. 79, pro parte.] Mwangadan River, S. of Fuladoga.

28. **C. Morus**, nov. sp. (Fig. 4). C. cœnobiis sphæricis, e cellulis confertis 16 compositis; cellulis globosis verrucosis, verrucis emarginato-truncatis in toto ambitu cellulæ uniuscujusque 9–10. Diam. cœnob. 35–36 μ; diam. cell. 9·5–10 μ. Mwangadan River, S. of Fuladoga.

The nearest species to this is *C. scabrum* Reinsch (Contrib. Flor. Alg. Aq. dulc. Promont. Bonæ Spei, *Journ. Linn. Soc. Bot.* xvi. 232, pl. vi. fig. 3), from which it differs in the more crowded cells, which are ornamented with more numerous and distinctly emarginate warts.

Protococcaceæ.

29. Glœocystis ampla (Kütz.) Rabh. *Flor. Europ. Alg.* iii. 29. Mwangadan River, S. of Fuladoga.

30. G. rupestris (Lyngb.) Rabh. *l. c.* 30. Mwangadan River, S. of Fuladoga.

31. Rhaphidium polymorphum Fresen. var. aciculare (A. Br.) Rabh. *l. c.* 45. Mwangadan River, S. of Fuladoga.

32. Scenedesmus obliquus (Turp.) Kütz. *S. acutus* Meyen; Ralfs, *Brit. Desm.* 191, tab. 31, fig. 14. Mwangadan River, S. of Fuladoga.

33. S. quadricauda (Turp.) Bréb.; Ralfs, *l. c.* 190, tab. 31, fig. 12 *a–f*. Mwangadan River, S. of Fuladoga.

Scytonemaceæ.

34. Scytonema sp. Crass. fil. 18–20 μ; crass. trich. 10–11 μ; heterocyst. 10 × 11·5–13 μ. G. Laschan, Leikipia.

Sirosiphoniaceæ.

35. Nostochopsis lobatus Wood, *Prodr. Freshw. Alg. N. Amer.* 127; Contrib. Hist. Freshw. Alg. N. Amer., *Smithsonian Contrib. to Knowledge*, 44, tab. iii. fig. 6; Bornet et Flahault, *Revis. des Nostoch. Hétérocyst.* iii. 80. Crass. fil. infer. 2 μ; crass. cell. sup. 3·5–4·5 μ; diam. heterocyst. 6–8 μ (Figs. 1–2). Inkuyuni, Kamassia.

The cells of the plants examined were rather smaller than the average for this species; all the heterocysts were lateral, and mostly stalked. The figures given by Wille (*Bidrag til Sydamerik. Algfl.* tafl. 1, f. 1–19) show much slighter intercellular constrictions, and the branching seems very different to that of the African plant.

Lyngbyeæ.

36. Oscillatoria limosa Ag. [*Oscillaria Frœlichii* Kütz.; *O. nigra* Ag.] Crass. fil. 15–15·5 μ. Mwangadan River, S. of Fuladoga.

37. Arthrospira platensis (Nordst.) Gomont, *Monograph. des Oscillar.* 267, pl. vii. fig. 27. *Spirulina Jenneri* Hass. *β. platensis* Nordst. in Wittr. et Nordst. *Alg. Aq. Dulc. Exsicc.* fascic. xiv.

no. 679. Crass. fil. 7·7–11·5 μ; long. cell. 3·8–5·5 μ; diam. spir. 42–46 μ; anfractibus 40–48 μ inter se distantibus (Figs. 5–6). Lake Losuguta (water with sulphides).

This is a most interesting alga, having been recorded hitherto only from Uruguay. The African plant is a little stouter, and has the spirals somewhat closer together; the habitat "water with sulphides" is also remarkable.

CHROOCOCCACEÆ.

38. CHROOCOCCUS TURGIDUS (Kütz.) Näg. *Gatt. Einzell. Alg.* 46; Rabh. *Fl. Europ. Alg.* ii. 32. *Protococcus turgidus* Kütz. *Tab. Phyc.* i. 5, t. v. f. 1. Diam. cell. sine integ. 5·5–9·5 × 10·5–17·5 μ, cum integ. 15–25 × 20–29 μ. Mwangadan River, S. of Fuladoga.

39. **Cœlosphærium confertum,** nov. sp. (Fig. 3). C. thallo globoso parvo; cellulis minutis periphericis, subglobosis angulariglobosisque, plerumque quaternis, confertis. Diam. thall. 125 μ; diam. cell. 1·8–2·4 μ. Mwangadan River, S. of Fuladoga.

40. MERISMOPEDIA GLAUCA (Ehrnb.) Näg. *Gatt. Einzell. Alg.* 55, t. i. D, f. 1; Rabh. *Fl. Europ. Alg.* ii. 56. Diam. cell. 2 μ. Inkuyuni, Kamassia.

41. M. PUNCTATA Meyen; Rabh. *l. c.* 57. Diam. cell. 4–4·5 μ. Mwangadan River, S. of Fuladoga.

DIATOMACEÆ.

42. SURIRELLA OVALIS Bréb. (W. Sm. *Brit. Diat.* i. 33, t. ix. fig. 68). Mwangadan River, S. of Fuladoga.

43. S. ANGUSTA Kütz. [*S. apiculata* W. Sm. *Brit. Diat.* ii. 88, N. 24]. Inkuyuni, Kamassia.

44. CYMATOPLEURA SOLEA W. Sm. (*l. c.* i. 36, tab. x. fig. 78). A broad form; long. 138 μ; lat. max. 45 μ. Inkuyuni, Kamassia.

45. EPITHEMIA GIBBA Kütz. (W. Sm. *l. c.* 12, tab. i. fig. 13). Mwangadan River, S. of Fuladoga. Inkuyuni, Kamassia.

46. E. SOREX Kütz. (W. Sm. *l. c.* tab. i. fig. 9). Mwangadan River, S. of Fuladoga. Inkuyuni, Kamassia.

47. E. VENTRICOSA Kütz. (W. Sm. *l. c.* tab. i. fig. 14). Mwangadan River, S. of Fuladoga. Inkuyuni, Kamassia.

48. EUNOTIA PECTINALIS Dillw.; Rabh. *Fl. Europ. Algar.* i. 73. [*Himantidium pectinale* Kütz.; W. Sm. *Brit. Diat.* ii. fig. 280.] G. Laschan, Leikipia. Lake Losuguta.

Var. UNDULATA (Sm.) Ralfs; Rabh. *Fl. Europ. Alg.* i. 74. [*Himantidium undulatum* W. Sm. *Brit. Diat.* ii. fig. 281.] G. Laschan, Leikipia.

49. CYMBELLA GREGORII Ralfs (Pritch. *Infus.* 876; Rabh. *Fl. Europ. Alg.* i. 79). Mwangadan River, S. of Fuladoga.

50. C. VENTRICOSA Ag. (Rabh. *l. c.* 82). Forma dorso subelatoconvexa. G. Laschan, Leikipia.

51. COCCONEMA CYMBIFORME (Kütz.) Ehrnb. (W. Sm. *Brit. Diat.* tab. xxiii. fig. 220). G. Laschan, Leikipia. Lake Baringo.

52. Amphora coffeæformis (Ag.) Kütz. (Rabh. *Fl. Europ. Alg.* i. 89). Lake Baringo.

53. Odontidium mutabile W. Sm. (*Brit. Diat.* ii. 17, tab. 34, fig. 290). Lake Baringo.

54. Fragilaria virescens Ralfs (W. Sm. *l.c.* 22, tab. 35, fig. 297). G. Laschan, Leikipia.

55. Synedra pulchella Kütz. (W. Sm. *l.c.* i. 70, tab. 11, fig. 84). G. Laschau, Leikipia.

56. S. Vaucheriæ Kütz. (W. Sm. *l. c.* 70, tab. 11, fig. 99). Inkuyuni, Kamassia.

57. S. splendens Kütz. (Rabh. *Fl. Europ. Alg.* i. 134). [*S. radians* W. Sm. *l. c.* 71.] Mwangadan River, S. of Fuladoga.

58. Tryblionella levidensis W. Sm. (*Diat.* ii. 89). Forma apicibus subobtusis. Mwangadan River, S. of Fuladoga.

59. Nitzschia Amphioxys W. Sm. (*Brit. Diat.* i. 40, t. 13, fig. 105). Mwangadan River, S. of Fuladoga.

60. N. parvula W. Sm. (*l. c.* tab. 13, fig. 106). Inkuyuni, Kamassia. Lake Losuguta.

61. N. linearis W. Sm. (*l.c.* 39, tab. 13, fig. 110). Inkuyuni, Kamassia.

62. N. tenuis W. Sm. (*l.c.* 40, tab. 13, fig. 111). Lake Losuguta.

63. Navicula limosa (Kütz.) Grun. (Rabh. *Fl. Europ. Alg.* i. 188). Mwangadan River, S. of Fuladoga.

64. N. rostrata Ehrnb. (Rabh. *l.c.* 197). Lake Baringo.

65. N. dicephala Ehrnb. (W. Sm. *Brit. Diat.* i. 53, t. xvii. fig. 157). Mwangadan River, S. of Fuladoga.

66. N. Bombus (Ehrnb.) Kütz. (Rabh. *Fl. Europ. Alg.* i. 204). Mwangadan River, S. of Fuladoga.

67. N. pygmæa Kütz. (Rabh. *l.c.* 184). [*N. minutula* W. Sm. *Brit. Diat.* t. xxxi. fig. 274.] Mwangadan River, S. of Fuladoga.

68. N. major Kütz. [*Pinnularia major* Rabenh.] G. Laschan, Leikipia.

69. N. viridis (Nitzsch.) Kütz. [*Pinnularia viridis* Ehrnb.] G. Laschan, Leikipia.

70. N. borealis (Ehrnb.) Kütz. [*Pinnularia borealis* Ehrnb.; W. Sm. *Brit. Diat.* ii. 94; Rabh. *Fl. Eur. Alg.* i. 216.] Inkuyuni, Kamassia.

71. N. Tabellaria Kütz. [*Pinnularia Tabellaria* Ehrnb.; *Pinnularia leptogongyla* Ehrnb.] G. Laschan, Leikipia.

72. N. Rabenhorstii Ralfs. [*Pinnularia interrupta* Rabenh.] G. Laschan, Leipipia. Mwangadan River, S. of Fuladoga.

73. Stauroneis anceps Ehrnb. (W. Sm. *Brit. Diat.* i. 60, t. xix. fig. 190). Forma polis subcrassioribus. Mwangadan River, S. of Fuladoga.

74. Pleurosigma Spencerii (Quek.) W. Sm. (*l.c.* 68, t. xxii. fig. 218). Mwangadan River, S. of Fuladoga.

75. Gomphonema tenellum Kütz. (W. Sm. *l. c.* 80, t. xxix. fig. 243). Inkuyuni, Kamassia.

76. G. capitatum Ehrnb. (W. Sm. *l. c.* t. xxviii. fig. 237). Inkuyuni, Kamassia.

77. Rhoicosphenia ? contracta (Kütz.) Rabh. (*Fl. Europ. Algar.* i. 292). G. Laschan, Leikipia.

Explanation of Plate 361.

a, a′ = front view (a fronte visa).
b = vertical view (a vertice visa).
c = side view (a latere visa).
d = basal view of semicell (a basi visa).

Figs. 1–2. *Nostochopsis lobatus* Wood. 520/1. *h*, stalked heterocysts; *h′* sessile heterocysts.
Fig. 3. *Cœlosphærium confertum*, n. sp. A few of the cells. 830/1.
,, 4. *Cœlastrum Morus*, n. sp. 520/1.
Figs. 5–6. *Arthrospira platensis* (Nordst.) Gomont. 520/1.
,, 7–8. *Cosmarium globulatum*, n. sp. 520/1.
Fig. 9. ,, *pectinoides* Wolle. 520/1.
,, 10. *Euastrum hexagonum*, n. sp. 520/1.
,, 11. *Cosmarium Mwangadanense*, n. sp. 520/1.
,, 12. ,, *trochiscum*, n. sp. 520/1.
,, 13. *Staurastrum nephroideum*, n. sp. 520/1.
,, 14. *Cosmarium rectangulare* Grun. var. *africanum*, n. var. 520/1.
,, 15. ,, *subcostatum* Nordst. forma *minor*. 520/1.
,, 16. *Staurastrum subdilatatum*, n. sp. 520/1.
,, 17. *Cosmarium subvenustum*, n. sp, 520/1.
,, 18. *Closterium littorale* Gay, var. *crassum*, n. var. 520/1.

NEW OR CRITICAL BRITISH MARINE ALGÆ.

By E. A. L. Batters, B.A., LL.B., F.L.S.

The species recorded in the accompanying list are, so far as I am aware, new to Britain; and, with the exception of the *Lithothamnia*, nearly all of them have been added to our marine flora during the last few months, principally through the exertions of Mr. George Brebner, who still continues his research-work at Plymouth with the most satisfactory results. For the identification of the *Lithothamnia* I am indebted to Mr. M. Foslie, of Trondhjem.

1. Oscillatoria rosea = *Oscillaria rosea* Crn. *Flor. Finist.* 113, pl. 2, gen. 16. Trichomata deep purple-red, from 2 to 4 mm. long and from 4 to 5 μ in diameter, more or less bent and twisted, slightly curved at the apex; cells about as long as broad; apical cell sharply pointed. On a polyzoan attached to a piece of broken bottle dredged from deep water, "Queen's Ground," Plymouth, *G. Brebner*.

When fresh the trichomes of this species are of a clear purple-red colour, which soon fades when the plant is mounted in Dean's medium. In all respects the British specimen agrees with the figure and description of the species given by the Crouans.

2. Symploca atlantica Gom. *Monog. Oscil.* 129, var. purpurea, nov. var. Erect filaments from 800 μ to 1 mm. long and from 6 to

6·5 μ in diameter. Articulations nearly square or slightly longer than broad; colour a dark purple-red. On an old shell dredged at the mouth of the Yealm, *G. Brebner.*

This variety differs from the typical form in the slightly greater thickness of the trichomes, which are of a deep, clear, purplish red colour, instead of the light bluish green of ordinary specimens; the patches are also much smaller, and the filaments are not collected into such evident teeth.

3. Microcoleus tenerrimus Gom. *Monog. Oscil.* 93. On rocks near high-water mark, Torquay, *E. A. B.* Easily distinguished from the only other marine species of *Microcoleus* found on the shores of Britain by the slenderness of the trichomes, which are only 1 to 1·5 μ in diameter and sharply pointed, and by the smaller number of them contained in each sheath.

4. Hyella cæspitosa Bornet et Flahault in Morot *Journ. de Botanique*, ii. 162; var. nitida, nov. var. Filaments clear purplish carmine, much and irregularly branched, and more slender than in the typical form; cells varying from square to several times longer than broad, frequently divided longitudinally (chroococcoid filaments, however, are rare); five, six, or more contiguous cells of the same filament often simultaneously converted into short, simple, forked, or irregularly-branched chains of sporangia. In old shells from deep water, Weymouth, *E. A. B.;* Malahide, *T. Johnson;* Plymouth, *G. Brebner.*

The colour of this alga is clear purplish-pink, not unlike that of *Conchocelis rosea*, with which it is frequently associated, but very unlike that of typical *Hyella cæspitosa*, from which it is also distinguished by many slight differences more easily seen than described. It is by no means improbable that it is really specifically distinct from *Hyella cæspitosa*, but I have seen too few specimens at present to be certain that the characters are constant.

It is worthy of remark that *Oscillatoria rosea*, the variety of *Symploca atlantica* described above, and the present variety, all of them obtained from deep water, where one would not expect to find any *Myxophyceæ*, are of the same purplish-red or pink colour, while specimens of the same genera obtained from the shallow water near high-water mark are always bluish green or greyish purple.

5. Ralfsia disciformis Crn. *Florule du Finist.* 166. Dredged from deep water near the mouth of the Yealm, and in Plymouth Sound, *G. Brebner.*

Plymouth specimens agree well with those distributed in Desmazières' exsiccata by the brothers Crouan. As a species, however, it must be confessed that the plant comes too near to *R. clavata*, from which it is distinguished by the shorter, less clavate paraphyses, which are often composed of but one or two cells, and are then hardly any longer than the sporangia.

6. Lithoderma simulans (= *Sorapion simulans* Kuckuck, *Bemerk. zur Mar. Alg. Helgoland*, 236). "Queen's Ground," Plymouth. I detected this species on some old shells dredged from the Queen's Ground, Plymouth, and sent to me by Mr. Brebner. The species

comes very near to *L. fatiscens* Aresch., from which it is only to be distinguished by the more pear-shaped unilocular sporangia, and by there being only one chromatophore in each cell of the thallus-filaments, differences which do not seem to me sufficient to justify the formation of a new genus. I may here mention that Mr. Brebner has found at Bovisand *Lithoderma fatiscens* Aresch. with plurilocular sporangia in every way similar to those figured and described by Dr. Kuckuck from Heligoland specimens.

7. **Streblonema Buffhamianum**, sp. n. Primary filaments decumbent, creeping between the cortical filaments of the host plant, much and irregularly branched, slightly nodose; cells 30–60 μ long by 9 or 10 μ in diameter; secondary filaments springing from the creeping filaments, clavate, all of nearly the same length so as to form an *Elachista*-like tuft; cells at the base of the erect filaments 30 μ long by 9–15 μ in diameter, near the apices of the filaments 20–30 μ long by 15–25 μ in diameter, Sporangia oval or roundish, 30–45 μ long by about 30 μ in diameter, sessile at the base of the erect filaments. In the cortical layer of *Castagnea Griffithsiana*. Falmouth, *T. H. Buffham*.

Shortly before his death, Mr. T. H. Buffham sent me some specimens of this plant, which he thought might prove to be a new species of *Strepsithalia*. The plant seems to me to belong to an undescribed species, but, as the erect filaments are not imbedded in a gelatinous substance, as in the genus *Strepsithalia*, I think it should be referred to *Streblonema*. I have dedicated the species to the memory of my friend, to whom British algology owes much.

8. ECTOCARPUS VELUTINUS Kütz. *Spec. Alg.* 458, var. LATERIFRUCTUS, nov. var. Unilocular sporangia very numerous, lateral, borne on the erect free filaments, sessile or terminating lateral branches, alternate or secund, solitary or in pairs, in other respects like the typical form. On *Himanthalia lorea*. Plymouth, *G. Brebner*.

In the ordinary form of this species the sporangia are always terminal on short, erect, usually simple, special filaments, while in the variety described above they are nearly always lateral, and either sessile or terminating lateral branches of the ordinary erect filaments. The whole plant bears a very remarkable resemblance to *Sphacella subtilissima* Rke., and, except that it does not turn black when treated with eau de Javelle, it would be hard to say how it differed from it. Mr. Brebner believes this is the ordinary winter form of *E. velutinus:* but I cannot agree with him in this, as, although I have seen many specimens of the species gathered in late autumn and winter, I have never before seen anything like this curious variety, nor has it, so far as I know, been met with elsewhere in Britain or abroad; and even the specimens sent to me by Mr. Brebner himself much later in the year were not to be distinguished from the ordinary form, although solitary lateral sporangia were very rarely to be met with on them.

9. **Acrochætium endophyticum**, sp. n. (*Chantransiella endophytica* Brebner *in litt.*). A microscopic species, endophytic in the cortical layer of *Dasya coccinea*. Primary filaments decumbent,

more or less swollen here and there, much and irregularly branched, interwoven, forming a network from which very short, few-celled, erect filaments arise, and breaking through the cortical layer of the host-plant terminate in a sporangium; cells of the decumbent filaments 6–18 μ long by 3 μ in diameter, those of the erect filaments about as long as or a little longer than broad, and of about the same diameter as the decumbent filaments; monospores nearly globular, about 6 μ in diameter, terminating the erect filaments, which are composed of from one to three or four cells. In the cortical layer of *Dasya coccinea*. Plymouth, *G. Brebner.*

This minute species bears the same relationship to the other species of *Acrochætium* that *Rhodochorton membranaceum* Mag. does to the other Rhodochortones.

10. PEYSSONNELIA RUPESTRIS Crn. *Flor. Finist.* 148, tab. 19, gen. 129. On old shells dredged from the "Queen's Ground," Plymouth. I detected this pretty little species on some old shells sent to me from Plymouth by Mr. Brebner. The species is distinguished from the other *Peyssonneliæ* by the very thin frond firmly adherent to the substratum, and entirely destitute of rhizoids; by the almost square cells of the thallus, the comparatively very large tetraspores, and the short paraphyses, which are about as long as the tetraspores, and, except in their greater slenderness, but slightly differentiated from the thallus-filaments.

11. CRUORIOPSIS HAUCKII, nov. nom. = *Cruoriella armorica* Hauck, *Meeresalg.* 31, non Crouan, *Ann. Sc. Nat.* 4th ser. xii. t. 22, fig. G. 34–37, nec Crn. *Fl. Finist.* 148, t. 19, gen. 128. Fronds forming thin, crust-like, purple-red expansions, closely adherent to the substratum, roundish or irregular in outline, from 1 to 3 mm. in diameter, and from 50 to 100 μ thick; the younger fronds frequently overlapping the older ones; cells at the base of the erect filaments 10–15 μ in diameter, and about as long as or a little longer than broad, those towards the apices three or four times longer than broad, and only 4 or 5 μ in diameter; tetraspores immersed in the substance of the frond, 24–30 μ long by 15–20 μ in diameter, irregularly divided, terminal on shortened thallus-filaments. On stones dredged off the west end of the breakwater, Plymouth, *G. Brebner.*

As originally described by the brothers Crouan, the genus *Cruoriella* appears to be very closely related to *Peyssonnelia*, and to differ from it only in the slightly different form of the paraphyses and the fan-shaped disposition of the cell-rows of the basal layer, characters which induced the late Prof. Schmitz to refer the well-known *Peyssonnelia Dubyi* Crn. to this genus. On the other hand, the plant described by Hauck as *Cruoriella armorica* is evidently not the same as that described by the Crouans under the same name, but is much more nearly related to *Cruoriopsis cruciata* Duf., as the tetraspores are immersed in the substance of the frond, not produced in superficial nemathecia as in *Cruoriella*, and the thallus-filaments are only loosely united to one another, while in *Cruoriella* they are firmly united into a more or less parenchymatous layer. From *Cruoriopsis cruciata* it is distinguished by the much larger *terminal* tetraspores, and by the more regularly tapering thallus-filaments.

Mr. Brebner has sent me from Plymouth specimens of a plant which agrees very exactly with Hauck's description of *Cruoriella armorica*, but as this name cannot, for the reasons given above, be retained for the plant, I have been compelled to give it a new name.

12. Cruoriopsis cruciata Dufour, *Elenco delle Alghe della Liguria —Commentario Crittogamologica Italiana*, ii. 59; Zanardini, *Iconogr. Phyc. Adr.* iii. 25, pl. 86, figs. 1–4. On old shells dredged from deep water near the mouth of the Yealm, and also from the "Queen's Ground," Plymouth, *G. Brebner & E. A. B.* British specimens of this species agree well with Zanardini's figure and description of this species, with the single exception that the tetraspores are irregularly divided. Dufour, however, says the genus differs from *Contarinia* (in which the tetraspores are irregular) only in the position of the tetraspores, which do not form superficial groups; and Zanardini says, "sufficiently clearly cruciate" (Abbastanza chiaramente quadripartite in forma di croce), and, to justify retaining the species in the genus *Cruoria*, instances *Hildebrandtia* (where the so-called cruciate tetraspores are really irregular) as a genus in which both cruciate and zonate tetraspores occur. I think, then, I may assume that in *C. cruciata* the tetraspores are always irregular. According to the late Prof. Schmitz, the real difference between *Cruoriopsis* and *Cruoria* lies in the mature cystocarp. In *Cruoriopsis* the filaments of the gonimoblast are not united, consequently free chains of carpospores are formed, as in *Peyssonnelia:* while in *Cruoria* the filaments of the gonimoblast are united by a gelatinous substance, and consequently the mature cystocarp forms a more or less irregular, compact mass of carpospores. *Cruoriopsis cruciata* can always be distinguished from *C. Hauckii*, described above, by the much smaller *lateral* tetraspores.

13. Cruoria rosea Crn. *Fl. Finist* 147. *Contarinia rosea* Crn. *Ann. Sc. Nat.* ser. 4, ix. 72, pl. iii. fig. v. *a*, *b*, *c*. Var. purpurea, nov. var. (*Contarinia cruoriæformis* Crn. *Ann. Sc. Nat.* ser. 4 (Bot.), ix. 71, t. iii. fig. iv. *a–d?*; *Cruoria purpurea* Crn. *Fl. Finist.* 147, pl. 18, gen. 123?). Crusts about 200–300 μ thick; tetraspores small, lateral, borne near the apices of the erect filaments, otherwise as in the typical form. On old shells dredged from the mouth of the Yealm, *G. Brebner.*

The crusts formed by this variety are much thicker than in the typical form, and the tetraspores are produced near the apices of the erect filaments, not at their base, ; but the remains of tetraspores formed at an earlier date are sometimes to be traced at the base of the erect filaments even of the variety. The cells of the basal layer of *C. rosea* are several times longer than broad, and it is obvious that in a transverse section they would appear very much shorter than in a section cut in the direction followed by the cell-rows of the basal layer. These apparent differences in the size of the cells of the basal layer, the position of the tetraspores, and the thickness of the crusts, seem to be the principal characters which separate *C. rosea* Crn. from *C. purpurea*

Crn. These differences, however, seem to me to hardly do more than mark stages in the development of a single species.

14. Rhododermis elegans Crn. *Flor. Finist.* 148, t. 19, fig. 130. On old shells dredged from the "Queen's Ground," Plymouth, *G. Brebner & E. A. B.*

Plymouth specimens of this species agree in every respect with the French specimens gathered by the Crouans. The vegetative portions of the frond are monostromatic, and it is only beneath the tetrasporic sori or where one frond overlaps another that the thallus is composed of more than one layer. On the other hand, the frond of the plant formerly described by me as a variety, *polystromatica*, of this species is always composed of several layers of cells, and the whole plant is so unlike typical *R. elegans* that, following the advice given me by the late Prof. Schmitz, I propose to raise it to specific rank as *R. polystromatica*. At one time Prof. Schmitz thought my *R. parasitica* and *R. polystromatica* sufficiently different from *R. elegans*, the only species of the genus previously known, to justify the formation of a new genus for their reception. Shortly before his death, however, he wrote to inform me that on again looking into the question he had come to the conclusion that I was right in placing them in the genus *Rhododermis*, as the differences were hardly generic.

15. **Rhodochorton parasiticum,** sp. n. (*R. sparsum* Batt. *List of Mar. Alg. Berw.*, non *Call. sparsum* Carm.). Fronds forming small, scattered, frequently confluent, velvety, carmine patches on the stems of *Laminaria hyperborea* (*Cloustoni*), composed of erect, free filaments from 1 to 5 mm. in height, which arise from endophytic filaments penetrating the tissues of the host-plant to a depth of from 200 to 500 μ and more. Endophytic filaments simple or branched, irregularly swollen here and there, either singly breaking through the cortical layer of the host-plant and then at once sending out compact tufts of free filaments, or first uniting laterally so as to form solid, roundish, oblong or irregularly-shaped masses from 100 to 150 μ in diameter, from which the erect free filaments arise; in both cases the endophytic filaments or cell-masses near the surface of the host-plant ultimately become confluent, and form a sort of pseudo-parenchymatous layer of considerable extent, which unites the several tufts of erect filaments. Cells of the endophytic filaments very irregular in shape and size, usually more or less angular, 3–30 μ long, and from 4 to 18 μ in diameter, the cells terminating the endophytic filaments downwards often sharply pointed. Erect filaments about 15 μ in diameter, simple or sparingly branched, branches long, erect, usually simple; cells in the centre of the filament from 1½ to 4 times longer than broad, those towards the apices of the filaments much shorter. Tetraspores about 24 μ long by 15 or 18 μ wide, borne on tufts of short, simple, forked or corymbose, opposite or alternate, few-celled special branches produced near the apices of the erect filaments. Berwick, Dunbar, &c., *E. A. B.*

I am indebted to the courtesy of the Director of Kew Gardens for permission to examine the type-specimens of Carmichael's

Callithamnion sparsum preserved in the Hookerian Herbarium. In habit they resemble either *Acrochætia* or *Rhodochortones*, but, as I was fortunate enough to find on the first fragment I examined a few axillary monospores, I am satisfied that the plant should be referred to the genus *Acrochætium* (*Chantransia*). The *Rhodochorton sparsum* of my *List of Berwick Algæ*, although it is, I believe, the plant usually so called by British authors, is very different from *C. sparsum* Carm., and appears to be distinct from any described form of *Rhodochorton*. It is closely related to *R. Rothii* Näg., but can at once be distinguished from that species by its parasitic habit and scattered mode of growth, not to mention the difference in habitat of the two species, *R. Rothii* growing only on rocks and near high-water mark, while *R. parasiticum* is always parasitic on the stems of *Laminaria hyperborea* at extreme low-water mark and beyond. I have seen no authentic specimen of Kjellman's *R. sparsum*, but most probably it is identical with the plant described above.

16. Lithothamnion incrustans Foslie, "Norwegian forms of *Lithothamnia*" (*Det. Kgl. Norske Videnskabers Selskabs Skrifter*, 1894, 94, pl. 18). Chapman's Pool, Dorset, and Cumbrae, *E. A. B.*
f. *Harveyi* Foslie, *l. c.* pl. 18, figs. 12–15. Cumbrae, *E. A. B.*

17. Lithothamnion Sonderi Hauck, *Meeresalg.* 273, pl. 3. Cumbrae, *E. A. B.* Isle of Man, *R. Harvey Gibson.*

18. Lithothamnion orbiculatum Foslie, *l. c.* 143, t. 22, figs. 10–11. Arran, *E. A. B.* Sea Mill, *E. M. Holmes.*

19. Lithothamnion flabellatum Rosenv. *Grönl. Havalg.* 772, figs. 1–2.
f. *Rosenvingii* Foslie, *l. c.* 70. Isle of Man, *R. Harvey Gibson.*
f. *Granii* Foslie, *l. c.* 70, tab. 17, figs. 1–7 et 22. Port Bannatyne, Bute, *D. Robertson.*

20. Lithothamnion Strömfeltii Foslie, *l. c.* 145. Bognor, *E. A. B.* Plymouth, *G. Brebner & E. A. B.*

21. Lithothamnion Lenormandi (Aresch.) f. *sublævis* Foslie *l. c.* 151. Berwick, *E. A. B.*

22. Lithothamnion Battersii Foslie, *New or Critical Lithothamnia*, 1, figs. 1–5. Cumbrae, *E. A. B.*

23. Lithothamnion corallioides Crn. *Fl. Finist.* 152, t. 20.
f. *australis* Foslie, Norw. Lith. *l. c.* 62, tab. 16, figs. 24–31. Cumbrae, *E. A. B.*
f. *flabelligera* Foslie, *l. c.* 62, tab. 16, figs. 32–37. Cumbrae, *E. A. B.* Port Bannatyne, Bute, *D. Robertson.*

DECADES PLANTARUM NOVARUM AUSTRO-AFRICANARUM.

Auctore R. Schlechter.

DECAS I.

1. **Muraltia alticola**, sp. n. Suffrutex subglaber, ramosus; ramis divaricatis, decumbentibus, patentibusve, 10–18 cm. longis, teretibus, foliosis, apicem versus subinconspicue puberulis, demum glabris; foliis subsessilibus, setaceo-filiformibus obtusis vel breviter apiculatis plus minusve recurvato-arcuatis, 0·4–0·7 cm. longis, glaberrimis; floribus axillaribus sparsis sessilibus, 0·5 cm. longis; sepalis erectis ovato-oblongis, interioribus mucronulatis, exterioribus obtusis, æquilongis, petalis lateralibus, duplo brevioribus; petalis lateralibus e basi angustata linearibus subacutis, intus sparsim pilosis, medio arcte coalitis, 0·5 cm. longis; carina propria 0·4 cm. longa, ungue lineari, lamina cucullata obtusissima, basi pilosa, appendicibus petaloideis cuneato flabellatis margine superiore crenulatis, 0·2 cm. longis; capsula suborbiculari, glabra, vel subglabra, cornubus filiformibus capsulæ æquilongis sparsim pilosulis; seminibus sparsissime retrorsim hispidulis.

In regione austro-orientali: in clivis montis Hangklip, prope Queenstown, alt. 6000 ped., Mart. 1893, *E. E. Galpin*, No. 1509.

The present species differs from *M. tenuifolia* DC., from the south-western region, by its flowers and fruits, as well as in its more shrubby and rigid habit. The lateral petals and carina are rose-coloured, the two appendages of the carina almost white.

2. **Oxalis Galpinii**, sp. n. Herba perennis, bulbosa, acaulis, 9–12 cm. alta; foliis erectis graciliter petiolatis glaberrimis, trifoliatis, foliolis obcordatis, apice profunde excisis, 0·8–1 cm. longis, infra apicem 1–1·1 cm. latis, serie una glandularum nigrum marginatis, utrinque cellulosis, petiolo ad 7 cm. longo, pedunculo gracili, unifloro, glaberrimo, folia excedente, supra medium bracteolis 2 minutis donato; calycis segmentis lanceolatis obtusis, glabris, vel subglabris, apice glandulis 2 oblongis badiis ornatis, 0·6 cm. longis, corollæ tubo dimidio brevioribus; petalis roseis ungue albido-flavescentibus, obtusis, 1·8 cm. longis; stylis dense hispidis; capsula calycem paulo excedente, oblonga obtusa, glabra.

In regione austro-orientali: in monte Hangklip, prope Queenstown, alt. c. 6500 ped., Novemb. 1893, *E. E. Galpin*, No. 1630.

The nearest allies to *O. Galpinii* are *O. psilopoda* Turcz. and *O. imbricata* E. Z., from both of which our plant is at once distinguished by its perfectly glabrous leaves. It possesses a slight resemblance to *O. semiloba* Sond., but differs from it by the single-flowered scapes. According to Mr. Galpin's statement, the flowers are pink.

3. **Buchenrœdera pauciflora**, sp. n. Suffrutex humilis erectus, e basi ramosus, 10–15 cm. altus; ramulis teretibus, puberulis, demum glabrescentibus, dense foliatis; stipulis foliaceis lineari-subulatis, petiolum vix excedentibus, glabrescentibus, c. 0·5 cm. longis; foliolis lineari-subulatis acutis, glabrescentibus, petiolo

paulo brevioribus; floribus purpureis, singulis vel geminis terminalibus axillaribus, pedunculo tenui strigilloso, folia paulo excedente, pedicello brevi; calycis segmentis subæqualibus subdeltoideis, acuminatis, brevissimis, glabris; vexillo subreniformi, apice breviter excisa, glabro, ungue lineari, 0·9 cm. longo, 1·2 cm. lato; alis graciliter unguiculatis, lamina oblique oblonga obtusa, basi auriculata, 0·9 cm. longis; carinæ petalis alis simillimis paulo majoribus lamina latiore, 1·2 cm. longis, obtusis; legumine lineari, glabro, apice stylo coronata.

In regione austro-orientali: in monte Hangklip, prope Queenstown, alt. 5500 ped., Novembr. 1893, *E. E. Galpin*, No. 1608.

In habit resembling *B. tenuifolia* E. Z., next to which I propose to place our plant. *B. pauciflora* is the first species in the genus with almost glabrous leaves. In many respects it resembles *Lotononis*, but the calyx-lobes are nearly equal. The two genera *Lotononis* (especially the section *Krebsia*) and *Buchenrœdera* are so nearly allied that it is nearly impossible to separate them.

4. **Cliffortia repens,** sp. n. Fruticulus e basi ramosus, decumbens, ramis teretibus elongatis, cortice bruneo, dense foliatis, glabris; foliis lineari-setaceis mucronatis, dorso subcarinatis, simplicibus, tenuissime pilosulis, 0·8–1·5 cm. longis; stipulis setaceis glabris, minutis; ovaris subcylindrico, glaberrimo, subecostato; calycis segmentis ovatis vel ovato-triangulis acutis, patentibus; stylo sanguineo valde plumoso, calycem plus duplo excedente.

In regione austro-orientali: in saxosi summi montis Drakensbergen, ad pontes fluminis Polela, alt. c. 6000–7000 ped., Febr. 1896, *M. S. Evans*, No. 614.

On account of its simple leaves, this species should be placed next to *C. pungens* Presl, from the Gnadendal and the Winterhoek Mountains. The distinction between these two species lies in the habit and the leaves, which are in *C. pungens* much more rigid and thicker, besides being rounded on the back and quite glabrous. The stigma in *C. repens* is very plumose and more cut than I have ever noticed it to be in any other species. I am sorry to say that there are no fruits or male flowers in the specimens before me, but only female flowers, in which the ovaries are almost cylindrical and quite smooth, with the exception of two nerves on one side. From *C. juniperina* L., which our plant resembles at first sight, it is distinguished by habit and the simple minutely pilose leaves.

5. **Wahlenbergia polytrichifolia,** sp. n. Herba perennis tenerrima, e basi ramosa, 5–7 cm. alta; ramis adscendentibus erectisve, foliis setaceo-subulatis, glabris, alternantibus, 1–1·5 cm. longis, tectis; inflorescentia terminali laxe 2–5-flora; pedicellis brevibus; calycis tubo hemisphærico, glabro, segmentis subulatis, margine sparsim ciliatis erecto-patentibus, glabris, tubo paulo longioribus, 0·3–0·4 cm. longis; corollæ tubo subcylindrico, calycis lobis æquilongo, lobis erecto-patentibus lanceolatis subacutis, 0·3 cm. longis; capsula ovoidea, glabra, 3-valvata; stylo filiformi, corollæ tubum conspicue excedente, glabro.

In regione austro-orientali: in saxosis in monte Hangklip,

prope Queenstown, alt. 6600 ped., Febr.–Mart. 1894, *E. E. Galpin*, No. 1808.

I propose to place this species next to *W. capillacea* A. DC., from which it differs by the habit, smaller flowers, different calyx, and much shorter corolla-tube. In the specimens at hand the flowers are white, but I do not know whether this is their natural colour or whether they have faded in drying.

6. **Lyperia breviflora**, sp. n. Suffrutex, e basi ramosa; ramis elongatis procumbentibus, teretibus, dense glanduloso-puberulis; foliis pro genere remotis ovatis vel ovato-oblongis obtusis vel subacutis, margine crenato-dentatis, basi obtusis, breviter petiolatis, utrinque glanduloso-puberulis, petiolo incluso 0·8–1·5 cm. longis, medio fere 0·5–0·9 cm. latis; floribus coccineis sub versus apicem ramorum axillaribus; pedicellis folia nunc æquantibus, nunc superantibus dense glanduloso-pilosis; calyce corollæ tubo paulo breviore vel subæquilongo, segmentis lineari-lanceolatis subacutis, dense glanduloso-pilosis, 0·4 cm. longis; corollæ c. 0·8 cm. longa; tubo pro genere perbrevi extus glanduloso postice supra basin subincurvo, faucem versus paulo dilatato, lobis rotundatis apice subtruncatis, subintegris; capsula demum calycem post anthesin paulo ampliatiam æquante, glanduloso-papilla.

Habitat in regione austro-orientali: ad pedem montium Drakensbergen, Polela, alt. 5000–6000 ped., Febr. 1896, *M. S. Evans*, No. 631.

This plant is allied to *L. mollis* Benth., but differs by its leaves and the exceedingly short corolla-tube. I know of no other species in the genus with such a very short corolla-tube, which we are accustomed to find now and then in *Chænostoma*. However, there cannot be the slightest doubt about our plant being a true *Lyperia*. Mr. Evans describes the flowers as scarlet.

7. **Plectranthus Galpinii**, sp. n. Suffrutex 2–3-pedalis, ramosus; ramis obtuse quadrangularibus, puberulis, foliatis; foliis ovatis acuminatis, basi truncatis vel subcordatis, margine crenato-dentatis utrinque tenuiter puberulis, subtus reticulato-venosis, venis subtomentosis, 9–15 cm. longis, medio fere 5–11 cm. latis, petiolo pilis sanguineis subtomentoso, 3–5 cm. longo; inflorescentia laxe paniculata, spicis erectis elongatis; bracteis lanceolatis acuminatis deciduis; verticellastris subsexfloris; pedicellis patentibus filiformibus apice post anthesin nutantibus, paulo elongatis; calycis segmentis subulatis, postico latiore acuminato, post anthesin bene evolutis e basi subdeltoidea subulatis acutissimis, glabris, postico late ovato vel subreniformi apiculato, reticulato-venoso; corollæ tubo 0·6 cm. longo, basi postice gibbo obtuso brevi donato, subrecto, labio postico erecto vel subreflexo circuitus subelliptico, apice obtuse trilobulato, 0·5 cm. longo, labio antico concavo minore c. 0·3 m. longo; staminibus corollæ tubum duplo excedentibus; calyce post æstivationem deflexo.

Habitat in regione austro-orientali: Rimers Creek prope Barberton (Transvaaliæ), alt. 3000–4000 ped., Mart.–Apr. 1890, *E. E. Galpin*, No. 939.

In habit this species resembles *P. fruticosus* L'Her., but is well distinguished by its leaves and the corolla. It differs from *P. laxiflorus* in having purple flowers, a nearly straight corolla-tube, and subcordate leaves.

8. **Plectranthus neochilus**, sp. n. Fruticulus erectus, ramosus; ramis obtuse quadrangularibus hirtis; foliis carnosiusculis ovato-ellipticis basi cuneatis, dimidio superiore crenato-dentatis, obtusis vel subacutis, petiolo in genere perbrevi, utrinque hirtis vel villosis demum glabrescentibus, ad 4·5 cm. longis, medio ad 2·5 cm. latis; inflorescentia paniculata, spicis dense multifloris elongatis; bracteis submembranaceis suborbicularibus acuminatis, permagnis, margine ciliatis, deciduis; verticellaris subsexfloris; pedicellis erectis pilosis, 0·5 cm. longis; calyce tenuissime puberulo, post anthesin deflexo, valde evoluto, segmentis anticis subulatis acutis, segmento postico latissimo mucronulato; corollæ tubo subcylindrico 0·5 cm. longa dimidio anteriore subdeflexo, labio posteriore erecto subquadrato apice 4-lobulato, lobulis obtusis, exterioribus angustioribus, 0·4 cm. longo, labio antico porecto, subcochleari obtuso, 1·1 cm. longo; staminibus labio antico alte adnatis, æquilongis.

Habitat in regione austro-orientali: Rimero Creek prope Barberton (Transvaaliæ), alt. 3200 ped., Jun. 1890, *E. E. Galpin*, No. 968.

Very unlike any described South African species. The flowers are said to be "deep purple."

9. **Euphorbia transvaalensis**, sp. n. Herba perennis ?, glaberrima, habitu *E. erubescentis* E. Mey.; ramis teretibus remote foliatis; foliis ellipticis obtusis vel breviter apiculatis, basi in petiolum brevem attenuatis, 4–6 cm. longis, medio 1·7–2·3 cm. latis, floralibus nunc lanceolato-ellipticis mucronulatis, nunc suborbicularibus obtusis, reticulato-venosis, 2–4 cm. longis; involucro singulo turbinato-campanulato, lobis erectis subquadratis ciliatis, obscure lobulatis; glandulis loborum magnitudine bilobis; flore ♀ demum involucrum excedente, ovario ovoideo glabro, stylis glabris, tertia parte basi connatis, ovario æquilongis, apice breviter bifidis; floribus ♂ pluribus; bracteolis linearibus vel lineari-spathulatis, apice fissis vel integris pilosis.

Habitat in regione austro-orientali: Barberton, prope Edwin Bray Battery (Transvaaliæ), alt. c. 2000 ped., florens Nov. 1890, *E. E. Galpin*, No. 1198.

Allied to *E. erubescens* E. Mey. in the section *Tithymalus*, but easily recognized by the leaves, fewer and larger involucres and larger glands, and very different floral leaves.

10. **Eriospermum dissitiflorum**, sp. n. Foliis synanthiis graciliter petiolatis, glabris, lanceolatis vel ovato-lanceolatis acutis, pro genere tenuibus 7–13 cm. longis, infra medium 4–6 cm. latis, petiolo glabro, 7–16 cm. longo; scapo gracili 80–90 cm. alto, apice laxifloro; floribus secundis, albidis; perigonii foliis ovatis vel ovato-oblongis acutis vel acuminatis, glabris, erecto-patentibus, 0·5 cm. longis, medio fere 0·3 cm. latis; staminibus petalis brevioribus filamentis petaloideis, basin versus conspicue dilatatis, ovario

glabro; capsula perigonium excedente, glabra, circuitu oblonga; bracteis membranaceis squamæformibus obtusis, minutis, pedicellis post anthesin paulo elongatis filiformibus glaberrimis, erectis.

Habitat in regione austro-orientali: in cacumine montium prope Queenstown, alt. 4500 ped., Jan. 1896, *E. E. Galpin*, No. 1944.

In its leaves our plant resembles somewhat *E. lanceæfolium* Jacq., but, besides the long slender petiole and the very thin texture of the leaf itself, it is well distinguished by the very lax-flowered inflorescence, the bracts, and the larger flowers on very slender pedicels. The thin texture of the leaf is very remarkable in the genus, and has to my knowledge never been observed before in any other species. *E. Bellendeni* differs from *E. dissitiflorum* by the different leaf and a very different inflorescence. The flowers are white, with a greenish centre-line on the back of the three outer segments.

DR. DONALDSON SMITH'S ACANTHACEÆ.

By A. B. Rendle, M.A., F.L.S.

The following is an account of the Acanthaceæ recently collected by Dr. Donaldson Smith in his expedition to Somaliland and Lakes Stefanie and Rudolf. The plants mentioned are all in the Department of Botany at the British Museum :—

Blepharis boerhaavifolia Nees. Sheik-husin, Sept. 21st, 1894.

Acanthodium spicatum Delile. Milmil, July 30th, 1894.

Barleria (§ *Eubarleria*) *submollis* Lindau. Between Jub River and Lake Stefanie, April 23rd, 1895.

Barleria (§ *Eubarleria*) *Hochstetteri* Nees. Okoti, Sept. 8th, 1894.

Barleria (§ Prionitis) **setigera**, sp. nov. Frutex ramis teretibus ascendentibus puberulis; foliis vix petiolatis oblanceolatis, basi cuneatis, interdum oblongis basi angustatis, apice mucronatis, margine et venis præcipue dorsalibus, albe-setuliferis, aculeis axillaribus quadripartitis; spicis densis ovatis, bracteis inferioribus foliaceis, superioribus angustatis lineari-lanceolatis dorso et margine setuliferis, bracteolis lineari-acuminatis vel ad aculeas reductis; floribus sessilibus; sepalis basi connatis aristatis margine et arista setuliferis, binis exterioribus ovatis, interioribus subulatis; corollæ tubo cylindrico sub ore vix ampliato, lobis subæqualibus ovatis obtusis; staminum filamentis planis e basi lata angustatis; staminodiis 2 minutis, antheras cassas gerentibus.

Hab. Darar, Sept. 15th, 1894.

A low thorny bush, 35 cm. high; the branches, the longest of which reaches 32 cm., are 2·5 mm. in diameter in the lowermost internodes, 2 mm. and less in the upper. The leaves have fallen except in the upper parts of the branches; they are 3·5–4 cm. long, 1·0–1·3 broad. The shoot in the leaf-axil branches immediately above its base into two decussating pairs of sharp needle-like spines about 1·5 cm. long. The dense spiny spike is

5 cm. long. The lower foliaceous bracts are 2 to 1·7 cm. long and 4·5 mm. broad; they become gradually narrower and sharper as we ascend the spike, in the upper part of which they are 1·5 cm. long by 1·5 mm. broad. The two outer sepals are 12–13 mm. long by about 2 mm. broad, the two inner are 10 by 1·25 mm. The corolla-tube is 12 mm. long by 1 mm. broad in the middle, 2 mm. at the mouth; the lobes are 8 by 3 to 4 mm. The filaments, which taper upwards from a broad ribbon-like base, becoming filiform above, are 13 mm. long; the anthers are 2 mm. long. The pollen assumes a tetrahedral shape from the distribution of the spines in three areas. The filiform style is 17 mm. long.

Near *B. Prionitis* L., but distinguished by the characteristic setulæ on the bracts and sepals, and by its smaller flowers, and markedly cuneate leaf-bases. In its foliage it resembles the Abyssinian *B. hypocrateriformis* Hochst. (which is generally considered as a synonym of *B. Prionitis* L.), but this is distinguished by its glabrous bracts and sepals, and the greater size of the latter. The flowers are also larger.

Var. *pumila*. Suffrutex parva horrida, foliis dense hirsutulis.

Hab. Okoto, Sept. 8th, 1894.

7 cm. high. Almost cæspitose in habit. The small pungent oblanceolate leaves (15 by 4 mm. or less) are thickly covered with stiff adpressed white hairs. The thorns are 4-partite, 5–7 mm. above the base.

Barleria (§ Prionitis) **Smithii**, sp. nov. Frutex ramis teretibus sparse et breviter pilosis, florentibus dichasia formantibus; foliis petiolatis, coriaceis, obovatis, vel orbiculari-obovatis, interdum ovatis, vel ellipticis, sæpius mucronatis, sparse pilosis; spinis axillaribus quadripartitis; floribus decussantibus in spicis terminalibus ordinatis; bracteis foliaceis oblanceolatis apice pungentibus, bracteolis rigidis subulatis; floribus sessilibus, sepalis acutis vel interdum obtusis, dorso pubescentibus exterioribus ovatis, interioribus minoribus lanceolatis; corollæ cœruleæ tubo cylindrico, lobo antico oblanceolato obtuso, ceteris subæqualibus basi connatis superne obovatis, basi cuneatis apice obtusis; staminodiis 2 minutis antheras cassas gerentibus; ovario pyriforme cum disco tenui alte circumdato.

No locality.

Size of plant unknown, the specimens consisting only of broken-off shoots 2·5 cm. long, branching to form dichasia. The main axis ends in a flower-spike, beneath which springs a pair of shoots having one or two leaf-bearing nodes, and then ending in a spike, beneath which again are borne two similar shoots. The greatest diameter of the shoot is 2·5 mm. The majority of the leaves are more or less broadly ovate, and pass somewhat abruptly into the slender petiole, which is 5 mm. long or less. The blade is generally between 3 to 4 cm. long and 1.5 to 2·5 cm. broad. The axillary spines are entire for 3 mm. above their insertion, and then divide into two decussating pairs of needles 1·5 to 2 cm. long. The flower-spikes are 6–8 cm. long. The bracts reach 2 cm. in length by 8 mm. in breadth, the spine-like bracteoles 11 mm. The outer sepals are 9 to 10 mm. long by 6 broad, the inner 8 by 3 mm. The corolla-tube is 13 mm. long by 2·5 in diameter, the anterior free lobe is 12 by 5 mm.; the other four are united below into a linear portion 10 by 5 mm., spreading above into four lobes, one of which is longer than the others, 16 by 8·5 mm., the other three being 14 by 7·5 mm. The filaments of the fertile stamens are 17 mm. long; the anthers (4·5 mm. long) have their halves diverging below, connate only in the upper half above their insertion. The staminodes are a little over 1 mm. long. The ovary (3 mm. long) is girt at the base by a thin cup-like disc, 1 mm. high, with an undulate margin. The filiform style is 2·5 cm. long.

A well-marked species of the § *Prionitis*, characterised by its blue flowers, broadly ovate coriaceous leaves, and pungent oblanceolate bracts.

Barleria (§ PRIONITIS) **linearifolia**, sp. nov. Frutex ramis incanis; foliis glabris sessilibus linearibus marginatis, apice pungentibus; floribus axillaribus decussantibus in spicam brevem densam horridam ordinatis; bracteis foliaceis, velut folia spinam sub medio 4-partitam subtendentibus; bracteolis spinosis; floribus inter majores; sepalis exterioribus lanceolatis acuminato-aristatis, interioribus subulatis; corollæ pallidæ (? flavæ) tubo cylindrico, lobis obtusis vix apiculatis antico cuneato ceteris basi connatis, lateralibus orbiculari-obovatis, posticis obovatis cum basi cuneata; staminodiis 3, pilosis, lateralibus antheras cassas gerentibus.

Hab. Turfa, Aug. 22nd, 1894.

Size unknown. Branch, 2·5 mm. in diameter, branching irregularly above from the abortion of one of each pair of opposite buds, and ending, like its branchlets, in dense flower-spikes, 5 cm. long or less. The leaves, except in the region of the flowers, have fallen. The axillary spines persist; they consist, like those in the lower portion of the spike, of a stem 10 to 12 mm. long, spreading above into four decussating needles 10 to 15 mm. long. The lower foliaceous bracts are 28 by 4 mm., and the subulate spiny bracteoles 23 mm.; as we ascend the spike the bracts and bracteoles become smaller, and the spine in the axil of the former much reduced; in the case of an upper flower the bracteoles were 7 mm. long. The same reduction occurs in the sepals. The outer sepals are in the lower part of the spike 24 by 4 mm., the inner 14 to 15 by 1 mm.; in an upper flower, 16 by 3 and 12 mm. (long) respectively. The corolla-tube is 2 cm. long, 1·5 mm. in diameter in the middle, 2·5 at the mouth. The odd lobe is 15 by 5 mm., the others are connate for 8 mm. of their length; the two lateral have a free portion 15 by 12 mm., the two posterior 15 by 8 mm. The filaments of the two fertile stamens are 2 cm. long, tapering to a filiform apex from a broader ribbon-like base; the anthers are 2·5 mm. long. The two larger staminodes are 2·5 mm. long, the median one is 1 mm. The cup-like disc round the base of the ovary is ·5 mm. high. The long filiform style is 32 mm.

Distinguished from other species of the section by its markedly linear leaves and bracts.

Barleria (§ *Somalia*) *diffusa* Lindau. Darar, Sept. 15th, 1894.

Crossandra undulæfolia Salisb. Lake Rudolf, Sept. 1st, 1895. Differs from the Indian specimens that I have seen in its less hairy thin membranous bracts with elevated veins.

Franchet (Révoil, *Faune et Flore des Pays Somalis*, p. 50) includes this plant in his list under its synonym *C. infundibuliformis* Nees. In contrast with the Indian forms, he notes the smaller leaves, shorter spikes, and less ciliate and hairy bracts, all of which are characteristic of our plant; but he describes the bracts as "obovatæ, glandulis luteis conspersæ." In our plant they are narrower (oblanceolate), and show no trace of yellow glands.

Crossandra mucronata Lindau (e descript.). Sheik-husin, Sept. 20th, 1894.

Eranthemum hypocrateriforme R. Br. Sheik-husin, Sept. 21st, 1894.

Ruttya fruticosa Lindau. Sheik-husin, Sept. 21st, 1894.

Justicia (§ ADHATODA) **gesnerifolia**, sp. nov. Suffrutex parva foliis subsessilibus rotundo-cuneatis interdum subspathulatis læte viridibus sparse pilosis; floribus mediocribus sessilibus axillaribus solitariis; bracteolis magnis foliaceis; calyce paene ad basin 5-partita, velut corollæ pubescente; segmentis inæqualibus linearibus vel lineari-lanceolatis acutis vel acuminatis; corollæ tubo late infundibuliforme, labio postico late ovato apice breviter bifido antico subquadrato superne breviter trilobato lobo medio laterales parvo excedente; filamentis curvis, antheræ partibus subæqualibus parte inferiore breviter calcarata; capsula glabra vix mucronata breviter stipata.

Hab. Shebele River, Dec. 3rd, 1894.

A low-growing shrub, scarcely 2 dm. high, the stout woody light-coloured decumbent stem, 3·5 mm. in diameter, breaking up into short woody branches, which bear the green densely-leaved shoots. The latter are subcompressed with a broad longitudinal furrow on the two surfaces; they are sparsely pubescent. The leaves are 1·5–2 cm. long by 6 to 15 mm. broad. The apex is very rounded. The bracteoles are leaf-like but narrower, 1·5 cm. long by 4–5 mm. broad. The sepals vary from 7–10 mm. in length, and from 5–1·5 mm. in breadth. Corolla-tube 8 mm. long, 7 mm. broad at the mouth. Upper lip 9 mm. long, and as broad at the base; lower as long, and 8 mm. broad at the base; central lobe 4 mm. broad at the base. Filaments 8 mm. long, in the dried specimens curving over between the lips, one on each side of the flower. Anthers scarcely 1·5 mm. long; spur on lower half very short, about ·25 mm. Ovary conical, 2 mm. long; style filiform, 10 mm. long, ending in a capitate stigma. Capsule 1 cm. long by 3·5 mm. broad, containing four seeds.

The species is well characterised by its habit, and cuneate leaves with a rounded apex.

Justicia (§ *Adhatoda*) *odora* Lam. (*Adhatoda odora* Nees). Between Jub River and Lake Stefanie, April 16th, 1895.

Justicia (§ *Tyloglossa*) *neglecta* T. Anders. North-west of Lake Stefanie, July 5th, 1895.

(To be continued.)

SHORT NOTES.

Donegal Plants.—*Cuscuta Epithymum* appeared on thyme in several patches in natural ground close to the hotel at Rosapenna, Carngorst. It is such an inconspicuous sort of plant, looking like a patch of withered reddish vegetation, that it may easily have escaped my observation in previous years. As early as 1767 Threlkeld recorded Dodder (probably this species) from "Magden Tower, near Drogheda." It had not been gathered subsequently up to the publication of *Cybele Hibernica* (1866), and I am uncertain if it has been gathered since in Ireland, but I think it has.* *Lotus tenuis* has appeared in considerable quantity in a patch of laid down grass in the same locality, opposite the entrance of the hotel. It is, I should say, undoubtedly established. The variation of its leaves towards those of *L. corniculatus* in some plants is very obvious. The species has an erect habit at Rosapenna. *Galium Mollugo* occurs sparingly, and undoubtedly introduced, with the preceding. This grass was laid down four years ago. *Reseda suffruticulosa* was also introduced, and has established itself in the same way. *Cochlearia groenlandica* grows in several places on the outer exposed bluffs and headlands of north-west Rossgull, about five miles north of Rosapenna: west of Gortnaloghoge is one station. Mr. Bennett, who kindly examined specimens, writes, "I sent your *Cochlearia* to Mr. Marshall, and he says, 'I believe the enclosed is true *C. groenlandica* L.'" I had so named it from memory of its appearance in Greenland. But I have little regard for it as a specific form, distinct from *anglica*.—H. C. Hart.

Polygala ciliata Lebel, forma.—A short time ago Mr. Hilton brought to the Natural History Museum, South Kensington, a very interesting *Polygala* which he had gathered on the Downs near Brighton. The sepals are strongly ciliate, more so than in some specimens we have of the Gogmagog plant, but it does not quite agree with Lebel's original description (in Grenier & Godron, *Fl. de France*, i. 195) of his *P. ciliata*. Two points of difference being (*a*) the racemes are often lateral; (*b*) the sepals taken as a whole are narrower (I say, taken as a whole, because they are not always all quite the same shape). We are fortunate in having in the Herbarium specimens from Lebel of his *P. ciliata*, and I notice the point he so emphasizes in his description, "les grappes terminales et jamais latérales," is not quite borne out by his specimens, the racemes of which, though generally terminal, are not invariably so. The sepals of the Brighton plant are narrower than in the Lebel specimens—an important point, as he says, "la largeur des ailes l'en distinguent parfaitement," so I think it must be referred to *P. ciliata* as a form. I notice *P. ciliata* Lebel, non Linn., is the *P. blepharoptera* of Borbas (*Oest. Bot. Zeit.* 1890, 177), which has got changed to *plepharoptera* in Hallier & Wolfarth's edition of

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* [See *Journ. Bot.* 1892, p. 14, where Mr. A. G. More records its occurrence in Kerry, Waterford, and Meath.—Ed. Journ. Bot.]

Koch's *Synopsis*, 251, and that MM. Rouy & Foucaud, in their recently published work, follow M. Corbière in reducing *ciliata* to a variety of *P. dunense* Dumortier. Since writing the above, I have received the following from Prof. Chodat, who has kindly examined the plant:—"This is a form of *Polygala ciliata* auct. (*P. vulgaris* var. *intermedia γ. ciliata* mihi). The true *P. ciliata* Lebel has much broader wings and more slender shoots, but some forms, as the *P. dunensis* Dum. and *P. dunensis* Corbière, agree in all parts with your plant. The characters, however, shown by these varieties are but slight, and due only to the station; so you may call your plant, if you will hold *P. ciliata* as a species, *P. ciliata* Leb. var. *dunensis* (Dum.). For me this plant is only one of the numerous varieties of *P. vulgaris;* its name would be *P. vulgaris* var. *intermedia γ. ciliata*, forma alis ± acutis, caulibus minus tenuioribus etc. (vide *Monogr. Polyg.* 45$\bar{2}$, § 2 (tab. xxxiii. fig. 4))."—E. G. Baker.

Euphrasia Kerneri Wettstein (p. 370).—This variety or subspecies of *E. officinalis* was plentiful at Chelsham, near Croydon (Surrey), in 1880. In 1894 Mr. F. Townsend wrote me, "It is a remarkable one, and, if constant, may deserve a varietal name." I found just the same plant on Buckland Hill, near Reigate, in 1873, and believe I saw it some years ago on Box Hill, but I have no specimens to confirm it.—Arthur Bennett.

Middlesex Mosses. — The following mosses, not hitherto recorded for Middlesex, supplement the lists already given in this Journal for 1894, pp. 106, 369:—*Gymnostomum rupestre* Schw. Near Harefield. — *Pottia lanceolata* Röhl. Above chalk cliffs, Harefield. — *Barbula subulata* var. *angustata* = *B. angustata* Wils. Braithwaite. Near Garret Wood. — *Bryum bimum* var. *cuspidatum* = *B. affine* Bruch, Braithwaite. Canal wall between Denham and "moor" locks. — *Scleropodium cæspitosum* Wils. Side of brook, Swakeleys, Uxbridge.—*Eurhynchium crassinervium* Tayl. Old chalk pit, Harefield Park. These few additions would appear to exhaust the list for this section of the county.—John Benbow.

Bucks Plants. — *Pinguicula vulgaris* grows sparingly on a marshy spot near Burnham Beeches. The plants on this limited area are so few that I refrain from indicating the exact locality. The *Utricularia intermedia* of Dr. de Crespigny's *New London Flora*, from "ponds, Burnham Beeches," is *U. vulgaris.*—John Benbow.

Moneses grandiflora in Argyle.—Sir John Campbell-Orde, Bart., recently showed me this plant growing on his estate near Lochgilphead, and assured me that it was not an introduction. This appears to be the first certain station for it in western Scotland. *Lactuca muralis* occurs there in considerable quantity; I understand that Mr. P. Ewing has already recorded it for v.-c. 98.—Edward S. Marshall.

NOTICES OF BOOKS.

The Flora of Dumfriesshire, including part of the Stewartry of Kirkcudbright. By G. F. Scott-Elliot, M.A., F.L.S. Dumfries: Maxwell. 8vo, pp. xl, 219, map.

A Flora of a Scottish county is a welcome sight, if only on account of its rarity. Considering the number of botanists which Scotland has produced, it is remarkable how few contributions have been made to our knowledge of the plants of the country, apart from its rare species. It is hardly too much to say that no Scottish county flora of marked excellence has yet appeared. It was hoped that Dr. Buchanan White's Perthshire Flora would set an example; but his lamented death has prevented, though we trust only for a time, the carrying out of this work.

Meanwhile Mr. G. F. Scott Elliot (who, we note, has recently, following the example of other great men, taken to himself a hyphen) has published a flora of his native county which, although by no means of first-rate or even second-rate excellence, as measured by the standard of English works of the kind, brings together a good deal of scattered information, and will form a basis for future workers. Mr. Elliot has added one new feature in the recording of insect visitors: "the catching of these," he says, "has probably occupied more than nine-tenths of the time which I have spent on the work," and he has "attempted to give an idea of the more common visitors of about 270 species."

The earlier portions of the book originally appeared as separate issues, to which we referred in these pages (*Journ. Bot.* 1891, 383; 1893, 96). The complete work only strengthens the opinion we then formed, that Mr. Elliot is not in his element when he undertakes a local flora. To do this satisfactorily, an intimate knowledge of British plants and their literature, a diligent personal search throughout the district, and a careful collation and sifting of authorities are required: while to produce a satisfactory book care in proof-reading and attention to suitable arrangements of type are absolutely necessary. So far as we can judge from this Flora, Mr. Elliot possesses these qualifications only in a limited degree. We fail to find a single observation, apart from generalities, bearing on the life-history of any species, although in the earlier portion of the book a good deal of care has been taken in describing the habitats; the grouping of forms is carried out in a way which we do not understand; and there is no evidence of any attempt to verify the accuracy of many of the authorities for certain localities. Everyone who has had anything to do with the compilation of local floras knows what extraordinary blunders are made by well-meaning but ignorant correspondents; and Dumfriesshire must be blessed with more than its share of trustworthy observers if the long list enumerated by Mr. Elliot is entirely composed of them. The author, however, thinks that (with one exception) "it may be considered certain that the records are entirely correct"; and no doubt he has reasons for this opinion.

Probably no local Flora extant contains so large a number of plants which have no claim to inclusion. The author explains his action thus: "I have admitted every species now found established in a wild condition, however introduced. . . . . The criterion I have taken is the establishment in a healthy condition of self-sown plants. None other is really of value, and certain interesting problems could not have been studied, if these doubtful forms had not been included. The climate of the county is so genial, that these introduced plants are exceedingly abundant, and exceedingly difficult to tell from plants undoubtedly native to Scotland." In another place, Mr. Elliot mentions as types of the plants whose presence is probably due to this geniality of climate, *Datura Stramonium*, *Gagea lutea*, and *Tragopogon porrifolius:* to us it appears that each of these is referable to a different cause of introduction, and the presence of two of them in many local lists would seem to show that climate has little to do with the matter.

If Mr. Elliot's standard were to be accepted, every cottage garden would contribute its quota to every local flora, for it is mainly peopled by "the establishment in a healthy condition of self-sown plants." And any one of these would have at least as good a claim to insertion as *Viola cornuta* and *Convolvulus tricolor*, which occurred at Dumfries railway-station in 1892, *Symphoricarpos racemosus* ("escape"), *Cornus sanguinea* ("planted"), *Geranium pyrenaicum* ("sown?"), *Campanula persicifolia* ("escape"), and many more.

We have not been able to discover what meaning Mr. Elliot attaches to the term "escape," with which he brands impartially such plants as *Geranium columbinum*, *Trifolium ochroleucum*, *Medicago denticulata*, *Galium tricorne*, *Caucalis nodosa*, *Malva borealis*, *Cuscuta Epithymum* (*!*), and many more. "Escape" from what? Surely the good folk of Dumfries do not cultivate any of these weeds in their gardens or fields? Introduced they may be, but they are no more "escapes" than the "escaped nuns" of Protestant fiction, or than the prisoner celebrated by Mark Twain, who after five years' incarceration opened the door and went away. No less than 146, including such plants as *Sibbaldia*, are included in the category of "escapes"—about one-sixth of the flora, which Mr. Elliot estimates at nearly nine hundred species.

Nor does Mr. Elliot's own definition hold good in all cases. *Rosa Dicksoni*, for example, an "escape" at Roadside New Mills, is "since rooted out": how then can this be considered as "now found established in a wild condition"? And on what ground are such species as *Trigonella ornithopodioides* (with one doubtful locality), *Ononis reclinata* ("supposed to be extinct"), *Spiræa Filipendula* ("requires confirmation"), *Pyrola rotundifolia* ("P. Gray, 1850?"), *Euphorbia portlandica* ("locality?"), *Alchemilla alpina* ("requires confirmation"), included in the Flora? The number of the species requiring confirmation is, by the way, very large, and it does not seem to have occurred to Mr. Elliot that it was part of his duty to try to supply this. In one case, at any rate, such confirmation is not difficult to obtain: of the two localities for *Centunculus* *minimus* it is said, "both much require confirmation"; a specimen from one of these (Kirkcudbrightshire), collected by Mr. F. R. Coles, is in the British Museum Herbarium.

Occasionally we find entries which at first sight are extremely puzzling—for example, "Tussilago petasites × farfara." This startling addition to our list of hybrids is due to erroneous inference. Mr. Elliot found "Tussilago hybrida" in Lightfoot's *Flora Scotica* as an Annandale plant, and, not knowing that this was merely the female form of *Petasites vulgaris*, concluded that a cross between Butterbur and Coltsfoot was intended.

When it is remembered that the whole of these plants—"escapes," extinctions, doubtfuls, hybrids, and the like—occupy the same position in the book as the most undoubted natives, it will be seen that Mr. Elliot has not availed himself of the opportunities which a variation of type provides: this is further evidenced by the printing of the extraordinary abbreviations of the authorities in the same type as the localities.

The book, however, is well printed, though we do not understand why the authorities are separated from the names by a period, thus—"*Thalictrum alpinum*. Linn." Without insisting that the authority is really part of the name, it is certain that apart from it it has no meaning. The proofs have not been carefully read, or we should hardly find "Camelina saliva," "Pinquicula" (twice), "Daucus Carrota," "Ornithogallum," "Geranium pheum," "Arctostaphylos ulva-ursi," "Spirea" (thrice), "Crystopteris," and others of the kind: the authorities for the species are occasionally omitted.

We sometimes hear of a sea-captain who, after many years' service in all parts of the world and in all kinds of weather, becomes sea-sick when he crosses the Channel. So Mr. Scott Elliot, who has botanized in South Africa, has collected in Madagascar, has added greatly to our knowledge of Tropical Africa and its flora, and has conducted an adventurous expedition to Ruwenzori, has found in the enumeration of the plants of his own small county a task beyond his powers of accomplishment. It may not be true that genius consists of "an infinite capacity for taking pains"; but it is certain that such a capacity is essential to any one who wishes to produce a standard local flora.

THE HORN EXPEDITION TO CENTRAL AUSTRALIA.*

In his Report, Prof. Ralph Tate gives an interesting account of the Larapintine and Central Eremian Floras, together with an enumeration of the plants of the former. These regions are in Central Australia, south of the Tropic of Capricorn, but considerably to the north-west of that vast expanse of water, the Northern Lake Eyre. In his *Handbook of Extra-tropical South Australia* Prof. Tate demarked the area occupied by the Eremian Flora and its subdivisions, the northern and central regions being separated from each other by a latitudinal line through Charlotte Waters. Now as the result of personal knowledge of the country he proposes to shift the boundary to the latitude of Engoordina. To the north of this is a tableland of Ordovician sandstone eroded in long parallel east and west valleys of varying width. This area Prof. Tate terms Larapintine from the native name Larapinta of the upper and middle Finke river. We gather from the Report that the first botanical exploration of this region was by J. Macdouall Stuart, who collected during his travels from the Finke River to the McDonnell Range in 1860–62.

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* Report of the Horn Expedition to Central Australia. Part iii. March, 1896.

The plants were determined by Baron von Mueller, and an enumeration of them was published as an appendix to the Journals of J. McD. Stuart, London, 1864. Ten years later Ernest Giles geographically explored the Larapintine region to the westward of the Finke River, and made extensive botanical collections; these were likewise worked out by Baron von Mueller, and published as an appendix to Mr. E. Giles' *Geographic Travels in Central Australia* (1872–74). It contains the names of 254 species, of which 114 belong to the Larapintine flora. Contemporaneously with Giles, W. C. Gosse crossed the western confines of the Larapintine region in his traverse from Central Mount Wedge and Mount Liebig to Mount Olga; and the Rev. H. Kempe, of the Mission station at Hermannsburg, has also made successive collections in the same region, the results of which have been published in the *Transactions of the Royal Society of South Australia*, vol. iii. p. 129, 1880, and vol. v. p. 19, 1882. In 1889 Mr. Tietkens traversed the northern part of the Larapintine region from Alice Springs to its western limit, and added fifty-eight species, including five new to science, to the Flora (*Trans. Roy. Soc. S. Austr.* xiii. 94–109, 170–171, 1890). Other smaller collections have been made, the novelties having been from time to time published by Baron von Mueller.

The number of species known for the Larapintine region previous to the advent of the Horn Expedition was 502; this has now been increased to 614, the additions including eight new species—*Acacia Cowleana* Tate, *A. frumentacea* Tate, *Didiscus Gillenæ* Tate, *Wedelia Stirlingi* Tate, *Goodenia Horniana* Tate, *G. Larapinti* Tate, *Elacholoma Horni* F. v. M. & Tate (a new genus of *Scrophularineæ*), *Xanthorrhœa Thorntoni* Tate—and sixteen new for South Australia.

The dominant feature of the Central Eremian region is the prevalence of salsolaceous plants, especially over the stony places and loamy flats; in the Larapintine region they are replaced by grasses, and of these a species of *Triodia* (porcupine grass, or, incorrectly, "spinifex" of explorers and residents) dominates sandy ground and the sterile slopes and tops of the sandstone table-lands. The arboreous vegetation is represented by *Casuarina Decaisneana* (desert oak), *Grevillea striata* (silky oak), *Brachychiton Gregorii*, *Ficus platypoda*, *Eucalyptus terminalis*, *E. Oldfieldii*, *Canthium latifolium*, *Livistona mariæ*, *Encephalartos Macdonnellii*, and others which are either restricted to the region or do not pass beyond its southern boundary. *Acacia Farnesiana*, *Atalaya hemiglauca*, *Eucalyptus tessellaris*, and *E. gamophylla* are prevalent, though they reach into the northern parts of the Central Eremian region. *Cassia eremophila* and *Eucalyptus microtheca*, which are very characteristic of the central region, are largely replaced in the northern one by *C. phyllodinea* and *E. rostrata* respectively. The lowland vegetation of the Larapintine region, comprising that of the river banks, the loamy plains, and sandy ground, consists in a greater part of species widely diffused throughout the Eremian region, extending far south in South Australia, eastward into New South Wales and South-west Queensland, and westward to the shores of Mid-western Australia. It offers considerable similarity to that of Sharks Bay, as enumerated by Baron F. von Mueller (*Parl. Report, Perth*, 1883); thus of a total of 332 species, deducting therefrom ten which are maritime, 187, or 60 %, are constituents of the flora of the Finke Basin. The orders *Zygophyllaceæ*, *Malvaceæ*, *Salsolaceæ*, *Leguminosæ*, *Myoporineæ*, and *Gramineæ*, which are most largely represented, have few species which are not common to the two areas. The aggressive nature of the alien plants is exhibited not only by their extensive distribution, but also by their ability to adapt themselves to extremes of soil and climate. Such species, among others, as *Tribulus terrestris*, *Cleome viscosa*, *Malvastrum spicatum*, *Boerhaavia diffusa*, *Salsola Kali*, *Mollugo hirta*, and *Pollichia zeylanica*, range from the river-banks and the loamy plains to the sandhills. Prof. Tate states he cannot write of a mountain flora because the number of actual species on the table-lands and other high-level tracts is absolutely few. The exploration of Station Range, 2179 ft. above sea-level, yielded only nineteen species, and equally poor results attended the ascents of other elevations; Mount Sonder (4497 ft.), the highest elevation explored, yielded rather more species.

An analysis of the 614 species constituting the Larapintine Flora as at present known gives the following results:—I. Exotic species, chiefly oriental, 125; II. Endemic species of exotic genera, 219; III. Endemic species of Australian genera, 270; Total, 614.

E. G. B.

The Characeæ of America. Part ii. Fasc. 3. By Dr. T. F. Allen. 1896.

The new part of Dr. Allen's account of the American *Characeæ* contains descriptions and figures of ten species of *Nitella*, of which two are described as new—*N. Leibergi* and *N. transilis*. The noticeable feature of this part is the introduction of etchings for the illustrations, some of them very well done and others very inferior. This process is certainly the most satisfactory of the various methods of illustration adopted by Dr. Allen, and we hope that he will continue it. The letterpress again contains an unreasonable number of "printer's errors."

H. & J. Groves.

ARTICLES IN JOURNALS.

Annals of Scottish Nat. Hist. (July). — W. Barclay, 'Notes on Scottish Roses.' — S. M. Macvicar, 'Doubtfully native Westerness plants.'

Bot. Centralblatt (Nos. 30, 31).—J. Wittlin, 'Ueber die Bildung der Kalkoxalat-Taschen' (1 pl.).—(No. 33). S. Ikeno, 'Vorläufige Mittheilung über die Canalzellbildung bei *Cycas revoluta*.'—(No. 34). C. Ochsenius, 'Petroleum.'

Bot. Gazette (July 31).—F. Crépin, 'Rosæ Americanæ.'—A. A. Smith, 'Development of cystocarp of *Griffithsia Bornetiana*' (2 pl.). —F. Renauld & J. Cardot, 'New Mosses of N. America' (3 pl.).

Bot. Zeitung (Aug. 16). — E. Palla, 'Zur Systematik der Gattung *Eriophorum*' (1 pl.).

Bull. Bot. Soc. France (xliii, 5, 6: July & Aug.). — P. van Tieghem, 'Caractères généraux des Loranthinées.' — J. A. Battandier, '*Ionopsidium heterospermum*, sp. n.' — F. Bosseboeuf, 'Structure du pétiole des *Quercus*.' — A. Chatin, 'Existence et symétrie de l'axe.' — E. Roze, '*Geum rivali-urbanum*.' — L. Lutz, 'Sur une tulipe monstrueuse.' — J. d'Arbaumont, 'Une vigne a inflorescence monstrueuse.' — —. de Boissieu, 'Notes sur la Flore d'Orient.' — P. van Tieghem, 'Organisation florale des Balanophoracées.'—C. Degagny, 'Sur la division du noyau cellulaire.'

Erythea (Aug.). — B. L. Robinson, 'Fruit of *Tropidocarpum*' (1 pl.).—F. S. Collins, 'New *Cyanophyceæ*.' — E. L. Greene, 'New Western *Ranunculaceæ*.'—F. W. Hubby, '*Phacelia Cooperæ*.'

Gardeners' Chronicle (Aug. 15). — *Adiantum malaliense* Jenman, sp. n. — (Aug. 22). J. G. Baker, 'The genus *Brodiæa* [*Hookera*] and its allies.'

Irish Naturalist (Aug.)—D. M'Ardle, 'Hepaticæ collected in Co. Carlow.'

Journal de Botanique (Aug. 1).—P. van Tieghem, 'Basigamie et homogamie.' — L. Patouillard & P. Hariot, 'Champignons de la Basse-Californie' (1 pl.).— —. Hue, 'Enumeration des Lichens de Savoie.'—(Aug. 1, 16). A. Franchet, 'Saxifragaceæ, Crassulaceæ, et Combretaceæ novæ e Flora Sinensi.'—(Aug. 16). E. Malinvaud, 'Nouvelles floristiques.'—L. Géneau de Lamarlière, 'Muscinées du Nord de la France.'

Malpighia (vol. x, fasc. v–vii). — R. F. Solla, 'Osservazioni botaniche durante una escursione in provincia di Cosenza.' — L. Nicotra, 'L'impiego del catetometro nella fisiologia vegetale.'— U. Brizi, 'Saggio monografico del genre *Rhynchostegium*' (1 pl.).— P. A. Saccardo, 'Mycetes sibirici' (2 pl.).—L. Buscalioni, *Saccharomyces guttulatus* (1 pl.). — L. Nicotra, 'Ultime note sopra alcune piante della Sardegna.'

Nuovo Giorn. Bot. Ital. (July 15). — L. Nicotra, 'Elementi statistici della flora italiana.'—A. Lenticchia, 'Variazioni morfologiche di vegetali spontanei e coltivati' (1 pl.). — F. Tassi, 'Micologia della provincia senese.' — U. Martelli, *Centaurea ferulacea*, sp. n.

Oesterr. Bot. Zeitschrift (Aug.).—G. Wagner, 'Zum Generationswechsel von *Melampsora tremulæ*.' — V. Schiffner, 'Ueber die von Sintenis in Türkisch-Armenien gesammelten Kryptogamen.' — F. Matouschek, 'Ueber zwei neue *Petasites*-Bastarde aus Böhmen' (1 pl.).—F. Arnold, 'Lichenologische Fragmente.'—O. von Seemen, 'Ueber die Diagnose für *Salix triandra*.'

BOOK-NOTES, NEWS, &c.

The *Flora of Tropical Africa* has received the attention of the House of Commons. On Aug. 7th the First Commissioner of Works was asked, "if the duty of preparing works on the African flora was entrusted to Mr. Dyer, of Kew Gardens, nearly twenty years ago; whether he is aware that this gentleman has published practically nothing on the subject; and whether he will urge Mr. Dyer either to complete the work or to abandon it, so as no longer to discourage private enterprise in the same field." In reply, Mr. Akers-Douglas said, "The third volume of the *Flora of Tropical Africa* was published in 1877. In 1891 the Treasury authorized the completion of the work in four more volumes, under Mr. Dyer, of Kew Gardens, on the understanding that one volume would be published every two years. No further volume has yet been issued, although portions of one are in type. Mr. Dyer has been urged to complete the work as rapidly as possible."

This is satisfactory as far as it goes, but Lord Salisbury and the numerous other persons who feel the importance of completing this long-neglected work must not depend too much upon the result of a question in the House. At least four times, the delay in publishing the *Guide* to the Gardens—the most generally useful of all the Kew publications—has been brought forward in the House of Commons: as far back as 1892 the then First Commissioner said it was "almost ready, and they hoped to have it out during the summer" —a statement which was received with laughter and a reminder that "a precisely similar answer" had been given fourteen months before. For six or eight summers at least, the thousands of visitors to Kew Gardens have been unable to obtain any guide to the vegetable wonders they see around them, and this must seriously interefere with the value of the Gardens as an educational institution.

When the *Times* (March 22, 1892) told us that "no reasonable man can doubt that the publication of the *Bulletin* is one of the most useful functions discharged by Kew Gardens," we ventured to deprecate the unfavourable inference which might fairly be drawn as to the slight value of Kew before that erratic little publication entered upon its eccentric career. Now that the *Bulletin* seems to have been dropped, we think that our warning is amply justified; for no one will deny that, however unsatisfactory it may have proved as to its publications, Kew has exercised great influence for good in its more legitimate sphere as an institution which promotes the development of economic botany in our colonies, and indeed throughout the world. It is, however, sometimes urged, and with some show of reason, that the Gardens might be made of greater use in connection with horticultural and agricultural experiments.

It is only fair, however, to say that the literary side of Kew is not altogether neglected. A paragraph in the daily papers informs us that "the first copy of *The Poetry of Kew Gardens*, an album of twenty-four reproductions of paintings by M. and Mme. C. A. de l'Aubinière, with an introduction and short history of the Royal Gardens themselves by Mr. W. T. Thiselton-Dyer, C.M.G., F.R.S., the director, has been accepted by the Queen, and Her Majesty has commanded her thanks to be conveyed to the artists for their beautiful work. The process by which the pictures are reproduced is the invention of Count Ostorog, and the album is got up by the Chiswick Press. The originals are to be seen at the North Gallery, Royal Gardens, Kew."

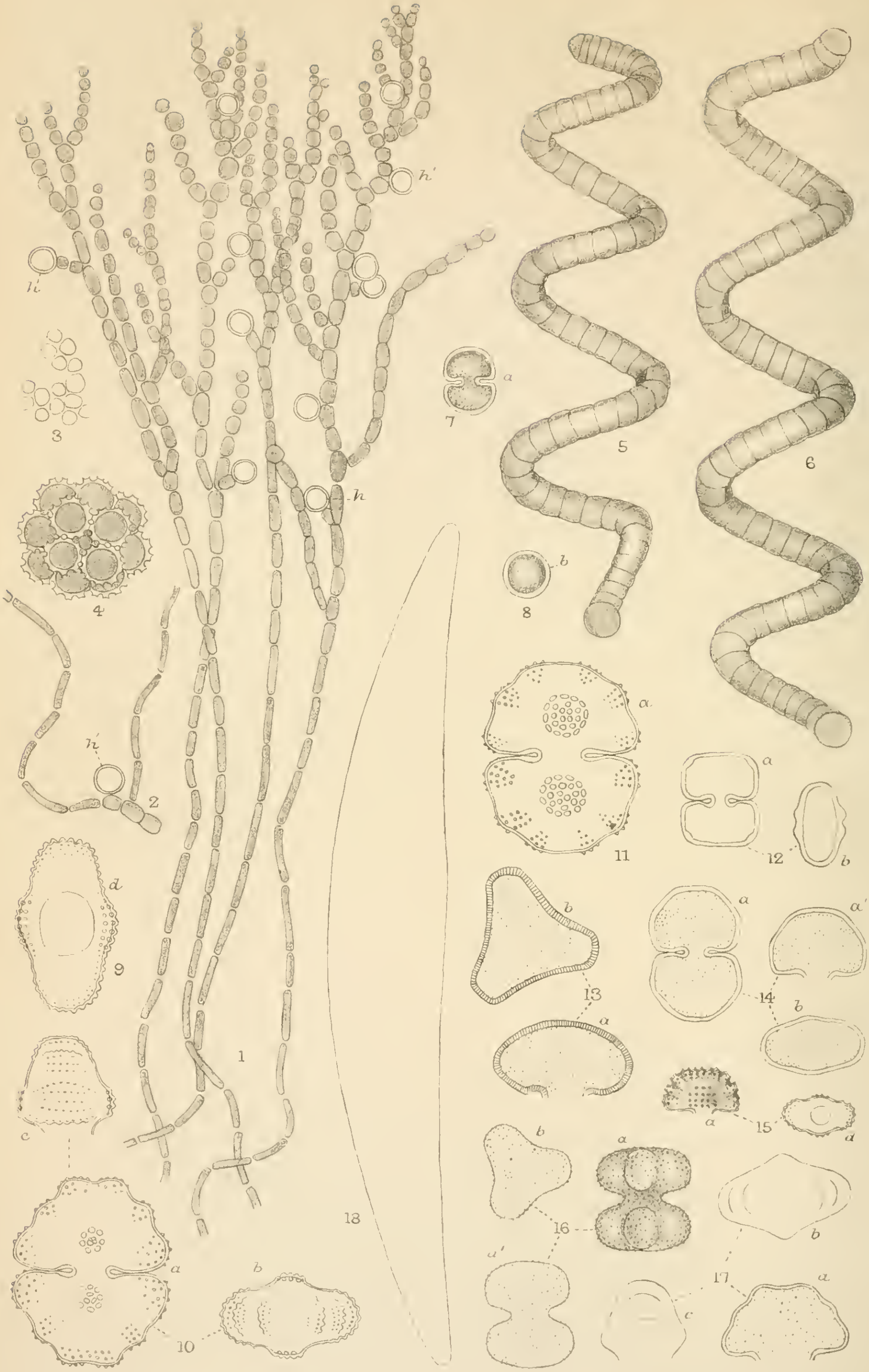
A TEMPORARY exhibition has been made in the Natural History Museum of a selection from the large collection of original drawings preserved in the Department of Botany. The drawings exhibited include examples of the brothers Bauer, Sydenham Edwards, G. D. Ehret, Mrs. Withers, W. H. Fitch, Sidney Parkinson, James Sowerby, J. F. Miller, F. P. Nodder, J. C. Dietzsch, and W. G. Smith.

THE last (July) part of the *Icones Plantarum* is somewhat wanting in interest. This may be partly accounted for by the fact that the contributions with which Professor Oliver has for so many years enriched its pages have now entirely ceased, while, so far, the new editor, Dr. Dyer, has not contributed anything to compensate for the great loss which science has sustained by the withdrawal of his learned predecessor from active botanical work. A series of nine plates illustrating the species of *Amomum* will be useful to those who have to deal with these difficult plants; and the following new genera are described:—*Stenolirion* Baker (Amaryllidieæ: Central Africa); *Garnotiella* Stapf (Gramineæ, Agrostideæ: Philippines); *Batesanthus* N. E. Brown (Asclepiadeæ, Periploceæ: Cameroons).

WE regret to announce the deaths of Mr. F. C. S. Roper, of Eastbourne, and Mr. Thomas Hick, of Owens College, Manchester. We hope to give some account of the deceased botanists in our next issue.

MESSRS. H. N. DIXON and H. G. JAMESON'S *Student's Handbook of British Mosses* has been published, and will be noticed at length in an early number of this Journal. It forms a handsome volume containing nearly 600 pages and 60 plates.

THE list of "First Records of British Flowering Plants" will shortly be concluded, and will then be issued in book-form. Any additions or corrections should be forwarded to the author, W. A. Clarke, Esq., F.L.S., 1, Warnborough Road, Oxford, for inclusion in the appendix to the list.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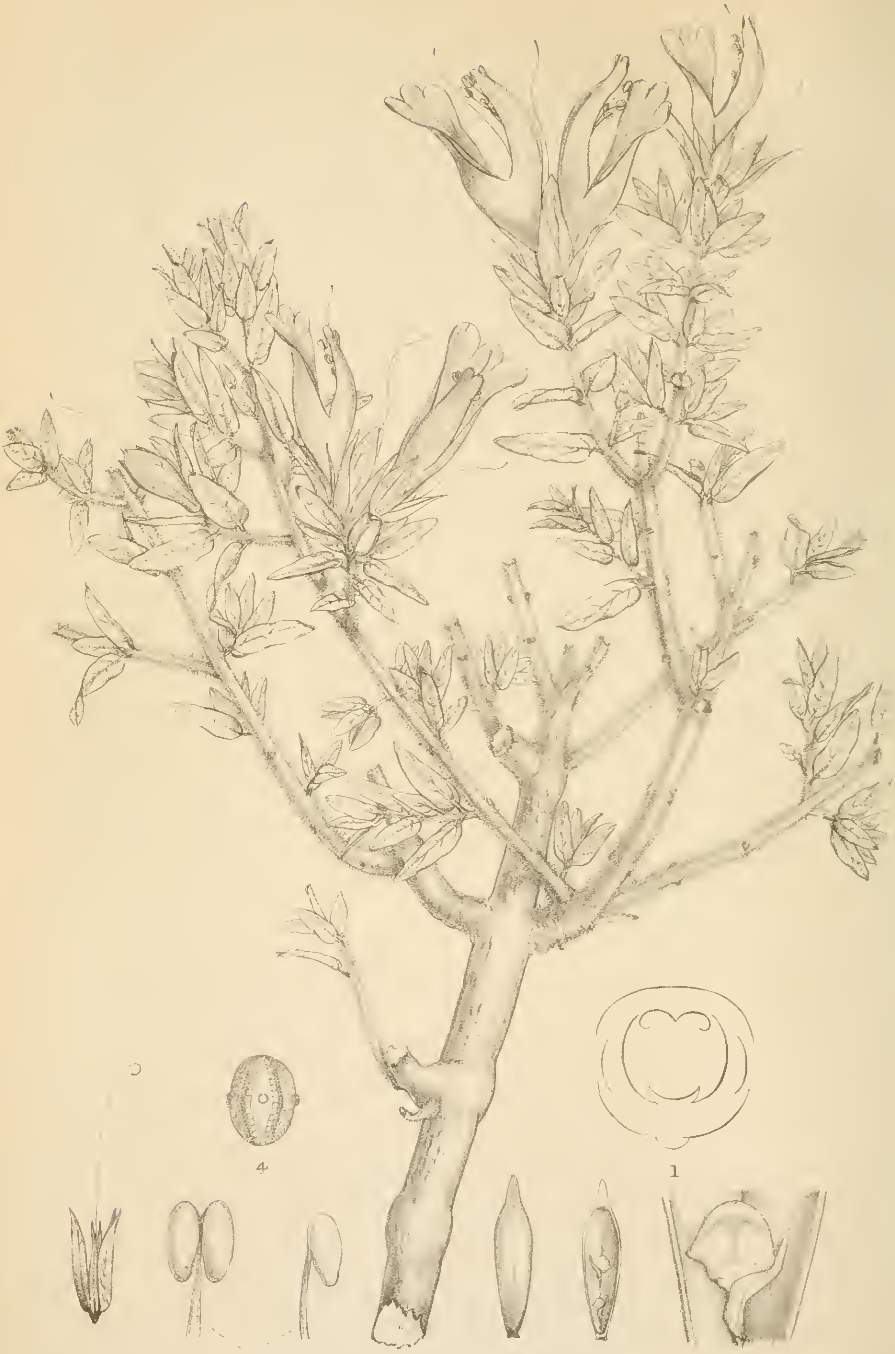
G.S.West ad nat.del
R.Morgan lith

West, Newman imp.

Algæ from Central Africa.



R. Morgan lith. West, Newman imp.

Lindauea speciosa *Rendle.*

DR. DONALDSON SMITH'S ACANTHACEÆ.

By A. B. Rendle, M.A., F.L.S.

(Plate 362.)

(Concluded from p. 398.)

Justicia (§ Tyloglossa) **lætevirens,** sp. nov. Frutex ramis glabris subteretibus, internodiis furculis geminis striatis; foliis læte viridibus parvis breviter petiolatis oblongis mucronulatis præter margines inferiores ciliatas glabris; inflorescentiis bifloris sessilibus axillaribus; bracteolis minutis; calycis segmentis subulatis superne recurvatis, apice et marginibus puberulis; corolla externe puberula, tubo ventricoso, labio postico saccato margine superiore libero bifido, interne cæruleo venis insigne lineato, superne flavo, interne carinis longitudinalibus lamelliformibus instructo, labio antico flavo cum lobis tribus crispulatis et disco in cristis convexis elevato; filamentis erectis antheris nutantibus, appendice plana emarginata; capsula glabra oblonga breviter mucronata et stipata.

Hab. Between Lakes Stefanie and Rudolf, July 9th, 1895.

The specimen consists of a long slender branch 6·5 dm. long, 1·5 mm. in diameter, and bearing near the top a very few slender opposite flowering shoots. The leaf-stalk is 1–2 mm. long, the blade 1·5–2 cm. by 5–6 mm. broad or smaller, the lower margins bear a few long ciliæ. The bracteoles are reduced to minute and fleshy teeth less than 1 mm. long. The calyx is deeply 5-partite, the segments 3·75–4·5 mm. long. The corolla-tube is 5 mm. long, 4 mm. in diameter at the mouth; the upper lip, 8 mm. long is broadly sac-like below and bluish in colour, marked internally with sharp longitudinal dark blue lines, the upper free margin is 2 by 3 mm.; keels start each from a tufted oblique crest just below the level of the stamens and run upwards, converging to within 3 mm. of the top. The lower lip is 11 by 10 mm. the central lobe is the larger. The filaments, 5 mm. long, are erect and parallel with the upper lip, the anthers being almost on a level with the top of the lip. The lower half-anther is 1·5 mm. long, its flat curving appendage (1 mm. long) ends with a triangular notch. The upper half-anther is a little more than 1 mm. long. The filiform style, 7 mm. long, is sparsely puberulous at the base. The four-seeded capsule is 12 mm. long.

In habit and foliage this species recalls some of the small-leaved forms of *J. insularis* T. Anders., but it is at once distinguished by its larger ventricose flowers.

Justicia (Tyloglossa) **shebelensis,** sp. nov. Suffrutex parva ramosa, ramis albidis scabridulis, junioribus velut foliis subflavide viridibus et pilosis; foliis parvis obovatis, apice rotundis, interdum retusis, breviter petiolatis; floribus sessilibus paucis in foliorum axillis aggregatis; bracteis foliaceis; bracteolis minutis triangulari-subulatis; calycis segmentis subæqualibus lineari-subulatis; corollæ flavæ tubo subinflato sub ore constricto, labio postico late ovato apice bifido, antico 3-lobato, lobis margine crispulatis, apice

rotundis, mediano duplo latiore; antherarum parte inferiore calcarato emarginato.

Hab. West of River Shebele, Dec. 3rd, 1894.

A small low-growing shrub about 12 cm. above ground. The strong rootstock breaks up into stout branches, which from a little above the base bear opposite branches, these again branching. The older internodes are divided by narrow longitudinal furrows into white linear strips. Petioles about 1–2 mm. long; leaves 8–15 mm. long by 5–8 mm. broad. Flowers 2–3 together, forming a reduced inflorescence in the leaf-axils. Bracteoles 1 mm. long. Calyx-segments 5–5·5 mm. long by 5 mm. broad at the base. Corolla slightly pubescent on the outside; tube 3 mm. long, 2·3 mm. broad, 1·5 mm. at the mouth; anterior lip 5 by 4 mm.; posterior 6 mm. long, centre lobe 3 by 3 mm., lateral lobes 3 by 1·5 mm. Filaments 3 mm. long, anthers 1 mm.; spur ·5 mm. broad. Ovary oblong, pointed, 2 mm. long, girt by an annular disc ·4 mm. high; style slender, 5 mm. long, apex notched.

Justicia (§ Rostellaria) **aridicola,** sp. nov. Suffrutex omnino, ramorum basibus exceptis, cum setulis albidis oppressis induta; foliis parvis ovatis obtusis breviter petiolatis; spicis terminalibus sub-brevibus; bracteis oblanceolatis, inferioribus foliaceis, bracteolis angustissime spathulatis; calycis segmentis subæqualibus subulatis, in parte inferiore cum glandulis capitatis indutis; corollæ tubo ad medium constricto, ore subampliato, labio superiore ovato apice rotundo, inferiore trilobato, lobo medio laterales parvo excedente, disco in cristis geminis convexis elevato; staminum filamentis medio curvatis, antheræ inferioris calcare curvulo acuto loculum æquante; capsula glabra subclavata.

Hab. Darar, Sept. 12th, 1894.

A low erect shrub with spreading ascending branches, scarcely 3 dm. high, the stem terete, 3 mm. in diameter at the base, the branches tapering to about 1 mm. in the upper internodes. Like the leaves, bracts, and bracteoles, the younger parts of the branches are densely covered with the short stiff pointed generally upwardly directed hairs. The slender leaf-stalks are about 3 mm. long, the leaves 2–2·5 cm. long by 8–10 mm. broad. The bracts in the lower part of the spike reach 12–15 cm. long by 4 broad, the bracteoles are 5–8 mm. by scarcely 1 mm. The sepals are 6–6·5 mm. long, increasing in the fruiting stage, the short calyx-cup, and the lower part of the segments bear on the outside short capitate glandular hairs; the upper part of the segments is densely covered with the characteristic setulæ. The corolla-tube is 6 mm. long, 1·5 mm. in diameter at the base, 2 mm. at the waist, widening gradually to 3 mm. at the mouth. The upper lip is 6mm. long, 5 mm. broad at its base; the lower is 7·5 mm. long by 6 mm. broad just below the rounded lobes, of which the slightly larger median is 1·5 mm. long by scarcely 2.5 mm. broad; the top is flat in the upper part, but the disc is raised into a pair of median convex crests. In the dried plant the stamens hang out one each side of the flower. The filament is 5 mm. long, the anther and the sharply pointed curving spur of the lower cell are each about

1 mm. long. The capsule is 12 mm. long, shortly mucronate at the tip, and gradually narrowing downwards below. There are 2 seeds in each chamber.

Near *J. palustris* T. Anders., but distinguished by its smaller leaves and narrow bracteoles.

Justicia (§ *Rostellaria*) *minor* T. Anders.

Hab. Darar and Smith River, September, 1894.

Duvernoia speciosa Rendle in *Journ. Bot.* 1896, 129. Sheik-husin, Sept. 21st, 1894.

Isoglossa parvifolia, sp. nov. Frutex ramis tenuibus elongatis laxiter ramulosis; foliis parvis petiolatis ovatis vel in ramulis interdum oblongis, obtusis, atrate viridibus sparse et breviter pilosis; inflorescentiis axillaribus laxissime paucifloris; bracteolis minutis; calycis segmentis subulatis hispidulis; corollæ tubo infundibuliforme, labio postico ovato emarginato, antico subrhomboideo lobis apicalibus subæqualibus brevibus rotundatis; antheræ partibus valde sejunctis; ovario ovato cum disco brevi circumdato; capsula fusiforme, seminibus 4.

Hab. Sheik-husin, Sept. 21st, 1894.

The short main stem branches immediately above its base, sending out long slender erect branches 4–5 dm. long and only 1·5 mm in diameter below. They are minutely puberulous, and their internodes bear four longitudinal furrows. The largest leaves have slender petioles 8 mm. long, and a blunt ovate blade 22 × 13 mm., which bears a few short appressed hairs on both surfaces, those beneath being longer. The peduncle of the 2–3–5-flowered inflorescences, and the short pedicels, are almost filiform. The calyx is 5-partite almost to the base, the segments are 3–4 mm. long, becoming longer (4–5 mm.) and linear-subulate in the fruit; they bear besides the short hairs a few capitate glandular hairs. The corolla-tube is 6 mm. long by 3 mm. in diameter at the mouth; the upper lip is 5 mm. by 5 mm. broad at the base, narrowing to 3 mm. above. The lower lip is 5 by 5 mm., the lobes 1–1·5 mm. long. The stamens, which are inserted half-way up the corolla-tube, are 6 mm. long, including the anthers, the halves of which are separated by a connective 1·5 mm. long. The anthers are 1 mm. long. The ovary is 1·5 mm. long, the flexuose style 7 mm. The disc encircling the ovary-base is about ·25 mm. high. The narrow fruit is 11 mm. long, the seeds are borne in the upper two-thirds.

A well-marked species, characterised by its small leaves and very lax few-flowered lateral inflorescences. It recalls somewhat in its foliage *I. Oerstedtiana* Lindau, but its leaves are much smaller.

Hypoestes Forskalei R. Br.—Milmil, July 30th, 1894.

Hypoestes verticillaris R. Br.—North-west of Lake Stefanie, July 1st, 1895.

Lindauea, gen. nov. Calyx *Barleriæ*. Corollæ tubum super basin cylindricam expansum, limbi bilabiati ringentes, labium posticum interiore angustum emarginatum, anticum patente trifidum, lobo medio lateralibus obtecto. Stamina 4 didynama, in tubo medio inserta, anteriora longiora et antheris bilocularibus instructa, loculi parallelis ellipticis, posteriora cum antheris unilocularibus. Pollen ellipticum, "spangen"-pollen. Stylus filiformis; stigma capitatum apice sulcatum. Ovula in utroque loculo gemina superposita; funiculus induratus unciformis. Frutex ramis validis, ramulis incano-tomentosis, et foliis parvis lanceolatis, elliptico-lanceolatis vel ellipticis, in partibus juvenilibus glandulifera. Flores mediocres in spicis brevibus paucifloris aggregati. Bracteæ inferiores foliaceæ, superiores sepalosæ; bracteolæ angustæ.

Africa orientalis equatorialis. Species 1.

Genus novum e tribo *Justicieæ*, subtribo *Barlerieæ*.

Lindauea strikingly recalls *Barleria* in its 4-partite calyx with narrow lateral and large broad median segments, the anterior of which is bidentate; and also in the æstivation of its corolla, and the number and arrangement of its stamens. It differs, however, in its markedly bilabiate corolla, a character which recalls *Lophostachys* and *Volkensiophyton*, and also in the form of its pollen. The latter has three broad ribs united at the poles, and six narrow ribs which are separated from the broader only by a very narrow furrow which stops considerably below the two poles. The surface of the ribs is corrugated, that of the narrower much more regularly and conspicuously. A pore-bearing protuberance occupies the centre of each of the diamond-shaped areas bounded by the narrow ribs. "Spangen"-pollen has not yet been recorded in the subtribe *Barlerieæ*, but Lindau (Engler & Prantl, *Pflanzenfam.* iv. 3*b*, 306) admits, though doubtfully, *Forsythiopsis* into his section *Ruellieæ*, though its pollen shows the same difference from the general form.

I have named the genus after Dr. Gustav Lindau, who has done much work on the order during the last few years.

L. speciosa, species unica. Foliis obtusis breviter petiolatis, læte viridibus, glanduliferis; bracteis superioribus ellipticis velut sepalis pubescentibus et glanduliferis, 3-nerviis; bracteolis anguste lineari-lanceolatis vel subulatis; calyce ad basin partito, sepalo postico plus minus elliptico vel elliptico-obovato, acuto, 3-nervio, antico elliptico-obovato vel anguste obovato, bifido, 2-nervio, lateralibus lineari-subulatis, acutis, uninerviis; corolla cæruleo-purpurea externe pubescente, labio postico angusto arcuato, antice latiore, cum lobo medio minore; fructu, vix matura, oblanceolata apice breviter rostrata. (Plate 362.)

Hab. Low-lying country a little to the east of the River Shebele, Dec. 30th, 1894.

The plant is apparently of considerable size; the single specimen consists of a stout woody branch 8 mm. in diameter, with a grey bark, branching irregularly and bearing at the top a number of rather crowded branches, the ultimate ramifications of which are short densely-leaved shoots. The branches bear a thick greyish tomentum, the ends of the shoots like the young leaves, the bracts and the sepals bearing more or less numerous short capitate glandular hairs. The largest leaves, which are lanceolate or elliptically lanceolate, have a stalk about 2 mm. long, and a blade 15 by 5–7 mm.; the leaves are generally smaller, about 12 by 4 mm.

The flowers are borne in short crowded few-flowered spikes at the ends of the branchlets. The lower bracts are foliaceous, the upper ones more membranous, narrowly elliptical and narrowed at both ends, and pubescent and glandular-hairy like the sepals; they reach 16 mm. in length by 3–3·5 in breadth. The bracteoles are 8–5 mm. long, about ⅔ mm. broad. The posterior sepal is 17 mm. by 5–5·5, the anterior, which is bifid for about one-third from the apex, is 16 by 5·5–6 mm., the lateral 13 by 1·5 mm.; they bear scattered soft white hairs and minute yellow glandular hairs. The corolla-tube is cylindrical for 8 mm. of its length, then suddenly expands into a funnel 6 mm. long; the upper lip has convex sides, is 17 mm. long, and when flattened 4 mm. broad; the lower is 18 mm. long, its three lobes are 5 mm. long, the middle 4 mm., the lateral 5 mm. broad. The stronger stamens are 18 mm. long, the smaller 11 mm.; the anthers 2·5 mm. The disc surrounding the ovary is 1 mm. high, and has an undulate margin. An unripe fruit was 12 mm. long.

LEUCOBARLERIA POLYACANTHA Lindau. Turfa and Shebele River, Aug. 1894.

As the corolla was absent in the specimens from which Lindau described the species (*Annuar. R. Istit. Botan. di Roma*, vi. (1896), 77), it will be useful to supplement his description from our material. It is small, sparsely hairy on the outside, 10 mm. long, with a narrow tube (3 mm. by scarcely 1·5 mm.) widening into a Convolvulus-like funnel 8–9 mm. broad at the mouth. The margin is undulate, and shows only a very slight indication of division into parts; it is traversed longitudinally by four sets of 3–4 prominent parallel veins. The small hairy stamens are inserted at the mouth of the tube, which is also pilose. The larger have a curved filament only 1 mm. long, from the top of which are suspended the two fertile anther-cells, which are barely ·5 mm. long; the smaller have a filament ·5 mm. long; only one cell is fertile, the other is a small elliptical stalked structure.

Dyschoriste somalensis, sp. nov. Frutex ramis teretibus plus minus elongatis suberectis, ramulis junioribus velut foliis et calyci pubescentibus; foliis parvis ovalibus interdum subobovatis, basi in petiolum breve angustatis; floribus axillaribus solitariis, bracteolis minutis linearibus; calyce tubuliforme superne ⅜ quinquefida, dentibus acutis; corollæ tubo longo tenue ore ampliato, lobis tribus obovatis altius connatis, duobus obovato-cuneatis; staminibus per paria basi connatis, antheræ partibus basi breviter mucronatis; capsula calyce inclusa.

Hab. Sheik-husin, Aug. 1894.

The specimen consists of a long almost erect strong woody shoot rooting at the base, nearly 1 metre high, and 3·5 mm. in diameter just above its base, also a shorter more spreading shoot which may have been torn from the base of the longer. The branchlets bear short leafy shoots. The leaves may be 17 mm. long (including a petiole of 3 mm.) and 7 mm. broad; generally they are smaller. The flowers are almost sessile in the leaf-axils. The bracteoles are 1·5 mm. long. The calyx-tube is 10 mm. long, and 2 mm. in diameter at the throat, becoming slightly narrower downwards.

The narrow triangular-pointed segments are 6 mm. long. The corolla is sparsely pubescent on the outside; the tube is 2 cm. long by 1·5 cm. broad, and widens abruptly at the mouth. The lobes are 3·5 mm. broad, the longer 6, the shorter 5 mm. long. The filaments are connate at the base, the longer filament of each pair is 2 mm. long, the shorter 1·5 mm.; the anthers are 1·3 mm. long. The pubescent filiform style is 2 cm. long. The 4-seeded capsule is 13 mm. long.

Resembles some forms of *D. radicans* O. K. (*Calophanes radicans* Nees) in habit and foliage, but is distinguished at once by its larger flowers with their long narrow corolla-tube.

Ruellia placoidea, sp. nov. Herba minima, ramis tenuibus velut foliis hirsutulis prostratis; foliis parvis ovalibus basi sæpe angustatis, utraque cum squamulis orbicularibus aculeiferis instructis; floribus axillaribus; calyce subæqualiter ad $\frac{3}{8}$ quinquefida lobis subacutis; corollæ tubo longo parte inferiore tenue, superiore latiore, lobis rotatis, duobus quam ceteri altius connatis.

Hab. Darro Mts., Nov. 11th, 1894.

The species is represented by two small prostrate shoots about 5 cm. long and ·5–·75 mm. in diameter. They are densely clothed with short stiff appressed hairs which, except in the upper internodes, spring from the centre of a large pale oval base. Both surfaces of the leaves are covered with similar but rounded placoid scales. The leaves are 8–11 mm. long by 6–7 broad; the blade tapers rapidly at the base into a petiole about 1 mm. long. The shortly hairy calyx is 8 mm. long; the narrow tube passes into five teeth, 3 mm. long and 1 mm. broad at the base, tapering slightly upwards to the rounded subacute apex. The corolla-tube is 15 mm. long, about $\frac{2}{3}$ mm. across in the lower half, becoming gradually swollen above to nearly 2 mm. diameter; the lobes are torn, but two are evidently more deeply connate than the other three, which are 5–6 mm. long by 3–5 mm. broad. The four small stamens are inserted in the swollen part of the corolla-tube; the filaments are quite distinct, 1·5 mm. long, the blunt anthers 1 mm. The style is slender, with a clavate tip, and 9 mm. long.

Apparently near *R. somalensis* Lindau, from the description in *Engl. Jahrb.* xx. 14, but evidently a smaller plant, with smaller subsessile leaves and flowers. The squamiform trichomes are also a distinctive feature.

Ruellia patula Jacq. Shebele and Smith Rivers, Sept. 1894.

Erratum.—For *Justicia* (§ *Adhatoda*) *gesnerifolia* on p. 398, read *Justicia* (§ *Adhatoda*) *gesneriflora*.

Plate 362.—*Lindauea speciosa*, branch, nat. size. Fig. 1. Diagram of arrangement of calyx and corolla. 2. Side view of flower after removal of corolla, nat. size. 3. Front view of upper portion of larger and smaller stamens, enlarged. 4. Pollen-grain, much enlarged. 5. Fruit; 6. ditto, cut open—both nat. size. 7. Funicle and unripe seed, enlarged.

LIST OF BRITISH CYPERACEÆ (EXCLUDING CAREX).

By C. B. Clarke, F.R.S.

I send you the names of the English *Cyperaceæ*, other than *Carex*, as they stand in my MS. of the Order.

I have referred under each to Syme Engl. Bot. v. x. so as to identify the plant meant without quoting any synonymy. His list of species exactly coincides with mine; his subspecies are only varieties for me. I have one additional species only, the *Schœnus ferrugineus*, lately got by Buchanan White.

The references to Linnæus' *Species Plantarum* are, as has long been usual in botanic literature, to the second edition. This edition is Linnæus's matured view, and it is only necessary in a very few cases (not at all in *Cyperaceæ*) to quote the first edition also, where some other author gives the plant a name between the first and second editions.

The names of these plants will of course vary a good deal according to the genera admitted. In this matter I have followed Kunth, Bentham, and Bœckeler, rather than Syme; for example, I admit *Eleocharis* as distinct from *Scirpus*, while I sink *Blysmus*.

But, assuming for a moment that everybody accepts the genera as I limit them, there still remain, in the present small list of uncontested species, a great percentage of names that may and will be contested.

1st. There is the case where a single species of Linnæus is now regarded as two. The question arises whether the Linnean name is to be retained for one of the two new ones. If, in such cases, the Linnean name is not to be kept, we shall lose about thirty per cent. of our Linnean names at once; and I cannot venture to guess, under the present splitting process, how many Linnean names will be left finally. In the subjoined short list, the Linnean name *Eriophorum polystachyon* is gone, while the Linnean name *Scirpus setaceus* is retained. I have done this because my predecessors have done this, and it is convenient not to disturb. It will be said that the retention of the Linnean name must in these cases depend on the quantity of confusion Linnæus has imported. This, like the question of sufficient description, will be measured differently by different minds, and presents an obstacle to that finality of naming which some see their way to.

2nd. There is the case (which very frequently arises) where R. Brown gives a list of the *Scirpus* species which he transfers to *Eleocharis*, but does not say what their specific names will be under *Eleocharis*. In this case, European writers attribute the *Eleocharis* species to R. Brown (as is done below); but the American modern school refuses to admit the authority.

3rd. There is the case where a man alters the spelling of the name of the genus to which he attributes a species. My practice is to accept the new spelling if the first distinctive letters of the name are preserved; but if an author alters *Eleocharis* to *Heleocharis* or *Rynchospora* to *Rhynchospora*, thus introducing trouble into the index, I treat the altered generic name exactly as a new name. I do not know what will be thought of this by the "finality" botanists; but I have found it the only plan to make a large index safe, *i.e.* so that I may not run danger of overlooking a plant in the index.

4th. There is the question of unearthing names buried for a century and more. In the particular cases that arise in the short list below, I think the oldest name, though long buried, may be conveniently unearthed: thus, in the case of *Cladium Mariscus* R. Br., a large section of authors call it *C. germanicum* Schrad.; to fall back on *C. jamaicense* Crantz, a name much older than either, may settle finally this struggle.

CYPERUS FUSCUS (Linn. Sp. Pl. p. 69); Syme Engl. Bot. v. x. p. 41.

C. LONGUS (Linn. Sp. Pl. p. 67, neque herb. propr.); Syme *l.c.* p. 41.

ELEOCHARIS ACICULARIS (R. Br. Prod. [1810] p. 224 in adnot.).—*Scirpus acicularis* Linn.; Syme *l.c.* p. 50.

E. PALUSTRIS (R. Br. Prod. [1810] p. 224 in adnot.).—*Scirpus palustris* Linn.; Syme *l.c.* p. 51.

Syme's subspecies *S. uniglumis* Link is the true Scandinavian plant,—a form only of *E. palustris;* but the "*uniglumis*" of Willkomm and Lange, Ball, and some public herbaria, is *E. multicaulis* Smith; many authors have proved this Mediterranean *uniglumis* a species distinct from *S. palustris.*

ELEOCHARIS MULTICAULIS (Smith Engl. Fl. v. i. [1824] p. 64).—*Scirpus multicaulis* Smith; Syme *l.c.* p. 53.

This species is often cited as *E. multicaulis* Dietr.; but Smith's publication under *Eleocharis* was prior to Dietrich's. Moreover, *Scirpus multicaulis* Smith was mainly, if not wholly, *Eleocharis palustris;* as is Syme's *S. multicaulis* partly, *viz.* that part which he says has 2-fid style.

SCIRPUS NANUS (Spreng. Pugill. i. [1815] p. 4).—*S. parvulus* Roem. et Sch.; Syme *l.c.* p. 56.

S. PAUCIFLORUS (Lightf. Fl. Scot. [1777] p. 1078); Syme *l.c.* p. 54.

S. CÆSPITOSUS (Linn. Sp. Pl. p. 71 et herb. propr.); Syme *l.c.* p. 55.

S. FLUITANS (Linn. Sp. Pl. 71 et herb. propr.); Syme *l.c.* p. 57.

S. SETACEUS (Linn. Sp. Pl. 73 *partim* neque herb. propr.); Syme *l.c.* p. 60.

S. CERNUUS (Vahl Enum. ii. [1806] p. 245).—*S. riparius* Poir. Encyc. Suppl. v. p. 103, *non Presl. S. Savii* Seb. et Mauri; Syme *l.c.* p. 58. *S. setaceus* Linn. Mant. p. 321 et herb. propr.

S. HOLOSCHŒNUS (Linn. Sp. Pl. p. 72 et herb. propr.); Syme *l.c.* p. 61.

S. CARICIS (Retz. Fl. Scand. [1779] p. 11).—*Blysmus compressus* Panz.; Syme *l.c.* p. 48.

S. RUFUS (Schrad. Fl. Germ. v. i. [1806] p. 133, t. 1, fig. 3).—*Blysmus rufus* Link; Syme *l.c.* p. 48.

S. AMERICANUS (Pers. Syn. v. i. [1806] p. 68).—*S. pungens* Vahl; Syme *l.c.* p. 66.

S. TRIQUETER (Linn. Mant. [1767] p. 29); Syme *l.c.* p. 66.

S. LACUSTRIS (Linn. Sp. Pl. p. 72 et herb. propr.); Syme *l.c.* p. 62.

S. MARITIMUS (Linn. Sp. Pl. p. 74 et herb. propr.); Syme *l.c.* p. 68.

S. SYLVATICUS (Linn. Sp. Pl. p. 75 et herb. propr.); Syme *l.c.* p. 69.

ERIOPHORUM ALPINUM (Linn. Sp. Pl. p. 77 et herb. propr.); Syme *l.c.* p. 70.

E. VAGINATUM (Linn. Sp. Pl. p. 76 et herb. propr.); Syme *l.c.* p. 71.

E. ANGUSTIFOLIUM (Roth Neue Beitr. [1802] p. 94; Syme *l.c.* p. 73. *E. polystachyon* Linn. Sp. Pl. p. 76 *partim*, et herb. propr.

E. GRACILE (Koch in Roth Catal. v. ii. [1799] Addend. p. 259); Syme *l.c.* p. 74.

E. LATIFOLIUM (Hoppe Taschenb. [1800] p. 108); Syme *l.c.* p. 75. *E. polystachyon* Linn. Sp. Pl. p. 76 *partim.*

RYNCHOSPORA ALBA (Vahl Enum. v. ii. [1806] p. 236, var. α *nec* var. β).—*Rhynchospora alba* Syme *l.c.* p. 46.

R. FUSCA (Link Handb. v. i. [1829] p. 100).—*Rhynchospora fusca* Roem. et Sch.; Syme *l.c.* p. 45.

SCHŒNUS NIGRICANS (Linn. Sp. Pl. p. 64 et herb. propr.); Syme *l.c.* p. 43.

S. FERRUGINEUS (Linn. Sp. Pl. p. 64 et herb. propr.).

CLADIUM JAMAICENSE (Crantz Inst. v. i. [1766] p. 362).—*C. Mariscus* R. Br.; Syme *l.c.* p. 44.

KOBRESIA CARICINA (Willd. Sp. Pl. iv. [1805] p. 206); Syme *l.c.* p. 77.

REVISION OF EXTRA-TROPICAL SOUTH AFRICAN ASCLEPIADACEÆ.

By RUDOLPH SCHLECHTER.

(Continued from p. 315.)

Suborder II.—CYNANCHOIDEÆ.

A. ASCLEPIADEÆ.

Subtribe I. ASTEPHANINÆ.

VIII. MICROLOMA R. Br. in Wern. Soc. i. 55 (1811); Dcne. in DC. Prodr. viii. 510 (1844); Bth. et Hk. f. Gen. Pl. ii. 747 (1876). *Hæmax* E. Mey. Comm. Pl. Afr. Austr. 223 (1837).

1. M. SAGITTATUM R. Br. *l.c.* 55 (1811); E. Mey. Com. Pl. Afr. Aust. 222 (1837); Dcne. *l.c.* 511 (1844). *Ceropegia sagittata* L. Mant. 215 (1767); Thbg. Prodr. Fl. Cap. i. 37 (1794); Fl. Cap. ii. 148; Lam. Encycl. i. 686, t. 179 (1783); Jacq. Hort. Schœnbr. i. 17, t. 38 (1797). *Eustegia hastata* Sieb. ex Dcne. *l.c.* 511 (1844).

Südwestliche Cape Colony, Little Namaqualand.

2. M. CALYCINUM E. Mey. *l. c.* 223 (1837); Dcne. *l. c.* 511 (1844).
Südwestliche Cape Colony, Little Namaqualand.

3. M. GLABRATUM E. Mey. *l. c.* 222 (1837); Dcne. *l. c.* 511 (1844).
Südwestliche Cape Colony, Little Namaqualand.

4. M. INCANUM Dcne. *l. c.* 511 (1844). *M. sagittatum* R. Br. var. *incanum* E. Mey. *l. c.* 222 (1837).
Südwestliche Cape Colony.

5. M. NAMAQUENSE Bol. in Journ. Linn. Soc. Bot. xxv. 163 (1890).
Little Namaqualand.

6. M. TENUIFOLIA K. Schum. in Engl. & Prantl, Nat. Pflanzenfam. ined. *M. lineare* R. Br. *l. c.* 55 (1811); E. Mey. *l. c.* 222 (1837); Dcne. *l. c.* 511 (1844). *Ceropegia tenuifolia* L. Spec. Pl. ed. 2, 310 (1763); Pers. Synops. i. 277 (1805); Thbg. Prodr. Fl. Cap. i. 37 (1794); Fl. Cap. 147 (1823).
Südwestliche Cape Colony.

7. M. MASSONII Schltr. *Astephanus Massoni* R. Br. *l. c.* 54 (1811). *Hæmax Massoni* E. Mey. *l. c.* 223 (1837); Dcne. *l. c.* 509 (1844). *H. Dregei* E. Mey. *l. c.* 223 (1837); Dcne. *l. c.* 509 (1844).
Uitenhage, Karroo, Orange Free State, Little Namaqualand.

IX. ASTEPHANUS R. Br. in Wern. Soc. i. 54 (1811); Dcne. in DC. Prodr. viii. 508 (1844); Bth. et Hk. f. Gen. Pl. ii. 747 (1876).

1. A. PAUCIFLORUS E. Mey. Com. Pl. Afr. Austr. 224 (1837); Dcne. *l. c.* 508 (1844).
Westliche Cape Colony.

2. A. MARGINATUS Dcne. *l. c.* 508 (1844); Harv. Thes. Cap. i. 57, t. 91 (1859).
Albany, Port Elizabeth.

3. A. ZEYHERI Turcz. in Bull. Soc. Nat. Mosc. xxv. pars ii. 314 (1852).
? (Zeyher no. 3406.)

4. A. NEGLECTUS Schltr. in Engl. Jahrb. xviii. Beibl. 45, 26 (1894).
Südwestliche Cape Colony.

Astephani species dubiæ.

5 ? A. TRIFLORUS R. Br. *l. c.* 54 (1811); Dcne. *l. c.* 508 (1844). *Apocynum triflorum* L. Suppl. 169 (1781); Roem. et Schult. Syst. vi. 122 (1820).

6 ? A. CORDATUS R. Br. *l. c.* 54 (1811); Dcne. *l. c.* 508 (1844). *Apocynum cordatum* Thbg. Prodr. i. 47 (1794); Flor. Cap. 163 (1823); Roem. et Schult. *l. c.* 123 (1820).

7 ? A. LANCEOLATUS R. Br. *l. c.* 54 (1811); Dcne. *l. c.* 508 (1844). *Apocynum lanceolatum* Thbg. Prodr. i. 47 (1794); Flor. Cap. 162 (1823); Roem. et Schult. *l. c.* 123 (1820).

Subtribe II. GLOSSONEMATINÆ.

X. RHOMBONEMA Schltr. in Engl. Jahrb. xx. (1895), Beibl. 50, 41.

1. R. LURIDUM Schltr. *l. c.* 41 (1895).
Transvaal.

Subtribe III. Asclepiadinæ.

XI. Schizoglossum E. Mey. Com. Pl. Afr. Austr. 219 (1837); Dcne. in DC. Prodr. viii. 553 (1844); Benth. et Hk. f. Gen. Pl. ii. 753 (1876). *Aspidoglossum* E. Mey. *l. c.* 200 (1837); Dcne. *l. c.* 555 (1844). *Lagarinthus* E. Mey. *l. c.* 202 (1837) pr. part.; Dcne. *l. c.* 556 (1844). *Rhinolobium* Arn. in Jard. Mag. Zool. Bot. ii. 420 (1838).

1. S. virens E. Mey. *l. c.* 219 (1837); Dcne. *l. c.* 554 (1844). *Cynanchum virens* D. Dietr. Syn. Pfl. 906.
Knysna, Uitenhage, Albany, Kaffraria.

2. S. atropurpureum E. Mey. *l. c.* 219 (1837); Dcne. *l. c.* 553 (1844); ? Harv. Thes. Cap. i. 27, t. 42 (1859). *Cynanchum atropurpureum* D. Dietr. *l. c.* 906.
Albany, Kaffraria, East Griqualand, Natal, Zululand.

3. S. cordifolium E. Mey. *l. c.* 219 (1837). *Cynanchum cordifolium* D. Dietr. *l. c.* 906.
East Griqualand, Pondoland, Natal.

4. S. bidens E. Mey. *l. c.* 220 (1837); Dcne. *l. c.* 554 (1844). *Cynanchum bidens* D. Dietr. *l. c.* 908.
Uitenhage, Graff Reinet, Kaffraria, East Griqualand.

5. S. hamatum E. Mey. *l. c.* 220 (1837); Dcne. *l. c.* 554 (1844). *Cynanchum hamatum* D. Dietr. *l. c.* 906.
Pondoland.

6. S. hirsutum Turcz. Bull. Soc. Imp. Nat. Mosc. xxi. pars i. 256 (1848); Walp. Ann. iii. 44 (1852).

7. S. Aschersonianum Schltr. in Bot. Verein. Brandenburg, xxxv. 48 (1893).
Wynberg, Somerset West, Caledon.

8. S. Bolusii Schltr. *l. c.* 48 (1893).
Caledon.

9. S. lamellatum Schltr. *l. c.* 48 (1893).
Muizenberg.

10. S. Guthriei Schltr. *l. c.* 49 (1893).
Wynberg.

11. S. lunatum Schltr. *l. c.* 49 (1893).
Caledon.

12. S. pedunculatum Schltr. *l. c.* 50 (1893).
Wynberg.

13. S. restioides Schltr. *l. c.* 50 (1893).
Capetown.

14. S. Schinzianum Schltr. *l. c.* 51 (1893).
Wynberg, Caledon, Swellendam, Riversdale, Humansdorp.

15. S. heterophyllum Schltr. *l. c.* 51 (1893), sub *S. Schinziano*. *Aspidoglossum heterophyllum* E. Mey. *l. c.* 200 (1844); Dcne. *l. c.* 555 (1844).
Uitenhage, Albany, Kaffraria.

16. S. CARINATUM Schltr. in Engl. Jahrb. xviii. Beibl. 45, 3 (1894).
George, Knysna, Albany, Kaffraria, East Griqualand, Natal.

17. S. FASCICULARE Schltr. *l.c.* 3 (1894). *Aspidoglossum fasciculare* E. Mey. *l.c.* 200 (1837); Dcne. *l.c.* 555 (1844); Harv. Thes. Cap. i. 5, t. 90 (1858).
Uitenhage, Albany, Kaffraria.

18. S. FLANAGANI Schltr. *l.c.* 3 (1894).
Kaffraria.

19. S. FILIFOLIUM Schltr. *l.c.* 4 (1894).
Knysna, Uitenhage, Kaffraria, Natal.

20. S. LINIFOLIUM Schltr. *l.c.* 4 (1894).
Albany, Kaffraria.

21. S. OVALIFOLIUM Schltr. *l.c.* 5 (1894).
Kaffraria.

22. S. TRIDENTATUM Schltr. *l.c.* 5 (1894). *S. virens* E. Mey. *l.c.* 219 (1837) p. part.
Kaffraria.

23. S. VIRGATUM Schltr. *l.c.* 6 (1894). *Lagarinthus virgatus* E. Mey. *l.c.* 208 (1837); Dcne. *l.c.* 556 (1844).
Kaffraria.

24. S. GALPINII Schltr. *l.c.* 15 (1894).
Pondoland, Transvaal.

25. S. PULCHELLUM Schltr. *l.c.* 15 (1894).
Natal, Transvaal.

26. S. BARBERÆ Schltr. *l.c.* 27 (1894).
Kaffraria?

27. S. GRANDIFLORUM Schltr. *l.c.* 27 (1894).
Albany, Natal.

28. S. TRUNCATUM Schltr. *l.c.* 28 (1894).
Kaffraria?

29. S. STENOGLOSSUM Schltr. *l.c.* 28 (1894).
East Griqualand, Natal.

30. S. VILLOSUM Schltr. *l.c.* 29 (1894).
George, Uitenhage.

31. S. ÆMULUM Schltr. in Journ. Bot. (1894), 258.
Dutoits Kloof.

32. S. EXCISUM Schltr. *l.c.* 259 (1894).
Kaffraria?

33. S. GLANDULIFERUM Schltr. *l.c.* 259 (1894).
Pondoland, Natal, Orange Free State.

34. S. OBLONGUM Schltr. *l.c.* 260 (1894).
Natal.

35. S. TOMENTOSUM Schltr. *l.c.* 261 (1894).
Langkloof.

36. S. ATRORUBENS Schltr. *l.c.* 353 (1894).
Kaffraria.

37. S. PACHYGLOSSUM Schltr. *l. c.* 354 (1894).
East Griqualand, Natal, Orange Free State.

38. S. PARVULUM Schltr. *l. c.* 354 (1894).
Queenstown, Kaffraria.

39. S. PYGMÆUM Schltr. *l. c.* 355 (1894).
Somerset East, Kaffraria.

40. S. STRIATUM Schltr. *l. c.* 356 (1894).
Natal.

41. S. UMBELLATUM Schltr. *l. c.* 356 (1894).
Kaffraria.

42. S. ALTISSIMUM Schltr. in Engl. Jahrb. xx. Beibl. 50, 13 (1895).
Transvaal.

43. S. ARANEIFERUM Schltr. *l. c.* 13 (1895).
Natal, Orange Free State.

44. S. BARBATUM Schltr. *l. c.* 14 (1895).
Transvaal.

45. S. BILAMELLATUM Schltr. *l. c.* 15 (1895).
Natal, Transvaal.

46. S. CAPITATUM Schltr. *l. c.* 15 (1895).
Transvaal.

47. S. FILIPES Schltr. *l. c.* 16 (1895).
Transvaal.

48. S. GLABRESCENS Schltr. *l. c.* 17 (1895).
Transvaal.

49. S. LONGIROSTRE Schltr. *l. c.* 17 (1895).
Transvaal.

50. S. NITIDUM Schltr. *l. c.* 18 (1895).
Natal, Transvaal.

51. S. ORBICULARE Schltr. *l. c.* 19 (1895).
Natal.

52. S. PALLIDUM Schltr. *l. c.* 19 (1895).
Transvaal.

53. S. PERIGLOSSOIDES Schltr. *l. c.* 20 (1895).
Transvaal.

54. S. PILOSUM Schltr. *l. c.* 20 (1895).
East Griqualand, Natal.

55. S. PUMILUM Schltr. *l. c.* 21 (1895).
Transvaal.

56. S. STRICTUM Schltr. *l. c.* 22 (1895).
Natal.

57. S. TENUISSIMUM Schltr. *l. c.* 23 (1895).
Transvaal.

58. S. TUBULOSUM Schltr. *l. c.* 23 (1895).
Natal.

59. S. UMBELLULIFERUM Schltr. *l. c.* 24 (1895).
Transvaal.

(To be continued.)

"LONDON PRIDE."

By James Britten, F.L.S.

I see that Mr. Henslow, in his recently published *How to Study Wild Flowers*, follows Dr. Prior in the explanation he gives for this name as applied to *Saxifraga umbrosa*. This supposed derivation is such an excellent example of the way in which—as in the old fable of "The Three Black Crows"—a vague and inaccurate statement develops into an accepted fact, that I think it may be well to put the various stages of development on record; and thus (perhaps) prevent future writers from falling into the same error.

The stages of development are as follow:—

1. "I know I have somewhere read that *Saxifraga umbrosa* was called London Pride because it was a great favourite of London, the partner in the firm of London and Wise, the celebrated Royal Gardeners of the early part of the last century."—R. H[eward] in *Gardeners' Chronicle*, May 2, 1863, p. 413.

2. "It is understood, upon apparently good authority, that of Mr. R. Heward in the Gardeners' Chronicle, to have been given to [*S. umbrosa*] in reference to the person who introduced it into cultivation, Mr. London, of the firm," &c., as above.—Dr. Prior, *Popular Names of British Plants*, p. 139 (1863 and subsequent editions).

3. "Named after Mr. London, of the firm of London & Wise, who first introduced it into cultivation, in the early part of the eighteenth century."—Rev. G. Henslow, *How to Study Wild Flowers*, p. 107 (1896).

It will be observed that Mr. Heward has now become the "authority" for what he had "somewhere read," and that London is credited with having "introduced into cultivation" what in the original statement was merely styled "a great favourite" with him: Mr. Henslow states the matter absolutely, as if there could be no doubt about it.

But what are the facts?

Certainly London did not introduce the plant into cultivation. Gerard had it in his garden, where it "flourished exceedingly," and it was evidently then common in London, for he says it is called "of our London dames Pratling Parnell" (*Herbal*, p. 645 (1597)). Parkinson says, "Some of our English Gentlewomen have called it The Princes Feather" (*Paradisus*, p. 234 (1629)).

Nor was the plant called after London, who died in 1717. The name "London Pride" was commonly given to the Sweet William in 1633 (Johnson's Gerard, p. 597), and earlier; it is called "Pride of London" in the index to Parkinson's *Paradisus* (1629), and in Sutherland's *Hortus Medicus Edinensis* (1613). It was commonly applied to *Saxifraga umbrosa* before the end of the century; Molyneux (Phil. Trans. xix. 510 (1697)) says it is "vulgarly call'd by the gardeners London Pride"; and Threlkeld (Syn. Stirp. Hibern. Appendix, p. 2 (1727)) cites the name incidentally as being in common use—"Vulgò London-Pride." This of course does not preclude the *possibility* of its being commemorative of London; but it is in the highest degree improbable that it could have originated in such a manner, having regard to the fact that the name was already well known as applied to another plant, and that similar appellations are common enough—*e. g.* "Barbadoes Pride," "Pride of India," and the like.

A REVISED LIST OF THE BRITISH CARYOPHYLLACEÆ.

By Frederic N. Williams, F.L.S.

Successive English floras and plant-lists, with pod-like iteration, continue persistently to ignore, in their circumscription of species, the names of genera in frequent use in many Continental floras; although the great practical usefulness of C. F. Nyman's *Conspectus*, and the indispensable assistance which it affords in the examination of material outside the range of insular prejudices, has done something towards counteracting the stagnating conservatism of Sir James Smith and those who continued to recognize his ascendency.

The following list is drawn up from material for the revision of some of the genera of *Caryophyllaceæ:* the name of each species (as well as the generic names in the first section) being followed by the name of the authority and date of publication. An asterisk precedes those which differ from the names given in the last edition of the *London Catalogue of British Plants;* the bracketed numbers corresponding with those in the *Catalogue.* It is hoped rather than expected that some of the proposed emendations may be acceptable.

Six references are given under the head of each genus, in order of date, beginning with the earliest correct one; and the citations have been carefully selected and verified. As but little attention is given to references in our English floras, Continental floras alone are quoted for genera.

Suborder I. Sileninеæ.

Tribe 1. Diantheæ.

1. Dianthus *Linn.* (1737).

Tribe 2. Sileneæ.

2. Saponaria *Linn.* (1737).
3. Silene *Linn.* (1737).
4.*Viscaria *Hall.* (1745).
5.*Melandryum *Röhl.* (1812).
6.*Coronaria *Linn.* (1737).
7.*Agrostemma *Linn.* (1737).

Suborder II. Alsinineæ.

Tribe 3. Alsineæ.

Subtribe 1. Stellarioideæ.

8.*Moenchia *Ehrh.* (1788).
9. Cerastium *Linn.* (1737).
10.*Malachium *Fries* (1817).
11. Holosteum *Linn.* (1737).
12. Stellaria *Linn.* (1753).
13. Arenaria *Linn.* (1737).
14.*Moehringia *Linn.* (1742).

Subtribe 2. Alsinoideæ.

15. Sagina *Linn.* (1737). 17.*Alsine *Wahlenb.* (1812).
16.*Honckenya *Ehrh.* (1788).

Tribe 4. Spergularieæ.

18. Spergula *Linn.* (1737). 19. *Spergularia *Pers.* (1805).

Suborder III. Polycarpineæ.

Tribe 5. Polycarpeæ.

20. Polycarpon *Loefl.* (1758).

1. DIANTHUS.—*Linn.* Gen. Plant. (ed. 1) p. 130; *Benth. & Hook.* Gen. Plant. i. p. 144; *Boiss.* Fl. Orient. i. p. 479; *Willk. & Lange,* Prodr. iii. p. 676; *Engl. & Prantl,* Natürl. Pfl. iii. abt. 1 b, p. 76; *Parl.* Fl. Ital. ix. p. 252.

Subgenus Carthusianastrum.

1 [193]. D. Armeria *Linn.* Sp. Plant. (ed. 1) p. 410 (1753).

Subgenus Caryophyllastrum.

2 [195]. D. cæsius *Smith,* Engl. Bot. t. 62 (1792).
3 [194]. D. deltoides *Linn.* l. c. p. 411.

Subgenus Proliferastrum.

4 [198]. D. prolifer *Linn.* l. c. p. 410.

II. SAPONARIA.—*Linn.* Gen. Plant. (ed. 1) p. 130; *Benth. & Hook.* Gen. Plant. i. p. 146; *Boiss.* Fl. Orient. i. p. 523; *Willk. & Lange,* Prodr. iii. p. 671; *Engl. & Prantl,* Natürl. Pfl. iii. abt. 1 *b*, p. 78; *Parl.* Fl. Ital. ix. p. 314.

5 [200]. S. officinalis *Linn.* Sp. Plant. (ed. 1) p. 408 (1753).

III. SILENE.—*Linn.* Gen. Plant. (ed. 1) p. 132; *Benth. & Hook.* Gen. Plant. i. p. 147; *Boiss.* Fl. Orient. i. p. 567; *Willk. & Lange,* Prodr. p. 644; *Engl. & Prantl,* Natürl. Pfl. iii. abt. 1 *b*, p. 70; *Parl.* Fl. Ital. ix. p. 336.

Subgenus Gastrosilene.

6 [202]. S. maritima *With.* Bot. Arrang. (ed. 3) ii. p. 414 (1796).
*7 [201]. S. inflata *Smith,* Fl. Brit. p. 467 (1800).

Subgenus Conosilene.

8 [204]. S. conica *Linn.* Sp. Plant. (ed. 1) p. 418 (1753).

Subgenus Eusilene.

*9 [205, 206]. S. gallica *Linn.* l. c. p. 417.
10 [207]. S. acaulis *Linn.* l. c. (ed. 2) p. 603 (1762).
*11 [208]. S. Otites *Smith,* Comp. Fl. Brit. p. 65 (1800).
12 [209]. S. nutans *Linn.* Sp. Plant. (ed. 1) p. 417 (1753).
13 [210]. S. italica *Pers.* Syn. Plant. i. p. 498 (1805).

IV. VISCARIA.—*Rupp,* Fl. Jenensis, ed. *Hall.* p. 126; *Röhl.* Deutschl. Fl. (ed. 2, 1812) i. p. 275; *Ledeb.* Fl. Ross. i. p. 328; *Boiss.* Fl. Orient. i. p. 658; *Willk. & Lange,* Prodr. iii. p. 643; *Engl. & Prantl,* Natürl. Pfl. iii. abt. 1 *b*, p. 70.

*14 [216]. V. VULGARIS *Rohl.* Deutschl. Fl. (ed. 2) i. p. 275.
*15 [217]. V. ALPINA *G. Don*, Gen. Syst. Bot. i. p. 415 (1831).

V. MELANDRYUM.—*Röhl.* Deutschl. Fl. (ed. 2) i. p. 274; *Reichb.* Handb. Nat. Pfl. p. 298 (1837); *Ledeb.* Fl. Ross. i. p. 326; *Boiss.* Fl. Orient. i. p. 659; *Willk. & Lange*, Prodr. iii. p. 641; *Engl. & Prantl*, Natürl. Pfl. iii. abt. 1 b, p. 73.

Subgenus ELISANTHE.

*16 [211]. M. NOCTIFLORUM *Fries*, in Lindbl. Bot. Notis. 1842, p. 143.

Subgenus EUMELANDRYUM.

*17 [213]. M. PRATENSE *Röhl.* Deutschl. Fl. (ed. 2) i. p. 275 (1812).
*18 [214]. M. SILVESTRE *Röhl.* l. c.

VI. CORONARIA.—*Linn.* Gen. Plant. (ed. 1) p. 135; Hort. Upsal. p. 115 (1748); *A. Br.* in Flora, xxvi. p. 368 (1843); *Garcke*, Fl. Deutschl. (ed. 15, 1885) n. 329; *Engl. & Prantl*, Natürl. Pfl. iii. abt. 1 b, p. 73 (LYCHNIS *subgen.* CORONARIA).

*19 [215]. C. FLOS-CUCULI *A. Br.* in Flora, xxvi. p. 368 (1843).

VII. AGROSTEMMA.—*Linn.* Gen. Plant. (ed. 1) p. 135; *A. Br.* in Flora, xxvi. p. 366 (1843); *Garcke*, Fl. Deutschl. (ed. 15, 1885) n. 330; *Willk. & Lange*, Prodr. iii. p. 639; *Engl. & Prantl*, Natürl. Pfl. iii. abt. 1 b, p. 70; *Parl.* Fl. Ital. ix. p. 464.

*20 [218]. A. GITHAGO *Linn.* Sp. Plant. (ed. 2) p. 435 (1762).

VIII. MOENCHIA.—*Ehrh.* Beitr. Naturk. Bot. ii. p. 177; *Gaertn. Mey. & Scherb.* Fl. Wett. i. p. 219; *Pers.* Syn. Plant. i. p. 153; *Boiss.* Fl. Orient. i. p. 711; *Willk. & Lange*, Prodr. iii. p. 628; *Engl. & Prantl*, Natürl. Pfl. iii. abt. 1 b, p. 81.

*21 [220]. M. QUATERNELLA *Ehrh.* l. c. p. 180 (1788), et Phytogr. p. 82.

IX. CERASTIUM.—*Linn.* Gen. Plant. (ed. 1) p. 576; *Benth. & Hook.* Gen. Plant. i. p. 148; *Boiss.* Fl. Orient. i. p. 712; *Willk. & Lange*, Prodr. iii. p. 629; *Engl. & Prantl*, Natürl. Pfl. iii. abt. 1 b, p. 80; *Parl.* Fl. Ital. ix. p. 469.

Species Monotocæ.

22 [221]. C. TETRANDRUM *Curt.* Fl. Lond. fasc. vi. t. 31 (1798).
23 [222]. C. PUMILUM *Curt.* l. c. t. 30.
24 [223]. C. SEMIDECANDRUM *Linn.* Sp. Plant. (ed. 1) p. 438 (1753).
25 [224]. C. GLOMERATUM *Thuill.* Fl. Env. Paris (ed. 2), p. 226 (1799).

Species Polytocæ.

26 [225]. C. TRIVIALE *Link*, Enum. Hort. Berolin. i. p. 433 (1821).
27 [226]. C. ALPINUM *Linn.* Sp. Plant. (ed. 1) p. 438 (1753).

28 [227]. C. ARCTICUM *Lange*, in Fl. Danica, t. 2963; et in Overs. Vid. Selsk. Forh. p. 119 (1880).

29 [228]. C. ARVENSE *Linn.* l. c. p. 433.

X. MALACHIUM.—*Fries*, Fl. Hall. p. 77; *Fenzl*, in *Endl.* Gen. Plant. p. 970; *Ledeb.* Fl. Ross. i. p. 417; *Boiss.* Fl. Orient. i. p. 730; *Willk. & Lange*, Prodr. iii. p. 637; *Parl.* Fl. Ital. ix. p. 466.

*30 [230]. M. AQUATICUM *Fries*, l. c. p. 77 (1817).

XI. HOLOSTEUM.—*Linn.* Gen. Plant. (ed. 1) p. 376 (app.); *Benth. & Hook.* Gen. Plant. i. p. 148; *Boiss.* Fl. Orient. i. p. 709; *Willk. & Lange*, Prodr. iii. p. 616; *Engler & Prantl*, Natürl. Pfl. iii. abt. 1 b, p. 80; *Parl.* Fl. Ital. ix. p. 515.

31 [219]. H. UMBELLATUM *Linn.* Sp. Plant. (ed. 1) p. 88 (1753).

XII. STELLARIA.—*Linn.* Gen. Plant. (ed. 1) p. 421; *Benth. & Hook.* Gen. Plant. i. p. 149; *Boiss.* Fl. Orient. i. p. 705; *Willk. & Lange*, Prodr. iii. p. 614; *Engl. & Prantl*, Natürl. Pfl. iii. abt. 1 b, p. 79; *Parl.* Fl. Ital. ix. p. 516.

Subgenus DICHODON.

*32 [229]. S. CERASTOIDES *Linn.* Sp. Plant. (ed. 1) p. 422 (1753).

Subgenus EUSTELLARIA.

Sect. *Petiolares.*

33 [231]. S. NEMORUM *Linn.* l. c. p. 421.

34 [232]. S. MEDIA *Cyrill.* Usub. Pl. Char. p. 36 (1784).

*35 [233]. S. UMBROSA *Opiz & Rupr.* in *Opiz*, Seznam, p. 93 (1852).

Sect. *Holosteæ.*

36 [234]. S. HOLOSTEA *Linn.* l. c. p. 422.

Sect. *Larbreæ.*

37 [235]. S. PALUSTRIS *Retz*, Fl. Scand. Prodr. (ed. 2) p. 106 (1795).

38 [236]. S. GRAMINEA *Linn.* l. c. p. 422.

39 [237]. S. ULIGINOSA *Murr.* Prodr. Stirp. Gotting. p. 55 (1770).

XIII. ARENARIA.—*Linn.* Gen. Plant. (ed. 1) p. 133; *Fenzl*, in *Endl.* Gen. Plant. p. 967; *Boiss.* Fl. Orient. i. p. 689; *Willk. & Lange*, Prodr. iii. p. 618; *Engl. & Prantl*, Natürl. Pfl. iii. abt. 1 b, p. 84; *Parl.* Fl. Ital. ix. p. 536.

Subgenus EUARENARIA.

40 [243]. A. SERPYLLIFOLIA *Linn.* Sp. Plant. (ed. 1) p. 423 (1753).

*41. A. LEPTOCLADOS *Guss.* Fl. Sic. Syn. p. 284 (1845).

Subgenus PENTADENARIA.

*42 [244, 245]. A. CILIATA *Linn.* Sp. Plant. (ed. 1) p. 425 (1753).

43 [246]. A. GOTHICA *Fries*, Novit. fl. Suec. ii. p. 33 (1839).

XIV. MOEHRINGIA.—*Linn.* Gen. Plant. (ed. 2) p. 166; *Mert. & Koch*, Deutschl. Fl. iii. p. 271; *Boiss.* Fl. Orient. i. p. 708; *Willk. & Lange*, Prodr. iii. p. 616; *Engl. & Prantl*, Natürl. Pfl. iii. abt. 1 b, p. 84; *Parl.* Fl. Ital. ix. p. 552.

*44 [242]. M. TRINERVIA *Clair.* Man. Herb. p. 150 (1811).

XV. SAGINA.—*Linn.* Gen. Plant. (ed. 1) p. 118; *Benth. & Hook.* Gen. Plant. i. p. 151; *Boiss.* Fl. Orient. i. p. 662; *Willk. & Lange*, Prodr. iii. p. 600; *Engl. & Prantl*, Natürl. Pfl. iii. abt. 1 b, p. 81; *Parl.* Fl. Ital. ix. p. 564.

Subgenus EUSAGINA.

Sect. *Procumbentes.*

45 [253]. S. PROCUMBENS *Linn.* Sp. Plant. (ed. 1) p. 428 (1753).

46 [254]. S. BOYDII, *F. B. White*, in Trans. Bot. Soc. Edinb. xvii. p. 33 (1887).

*47 [250]. S. APETALA *Ard.* Animadv. Bot. ii. [1764] t. 8, fig. 1 (1763).

48 [251]. S. CILIATA *Fries*, in Liljeb. Sver. Fl. (ed. 3), p. 713 (1816).

Sect. *Maritimæ.*

49 [249]. S. MARITIMA *Don*, Hort. Sicc. Brit. n. 155 (1810).

*50. S. ALPINA *G. C. Druce*, in Ann. Scott. Nat. Hist. (Oct. 1892).

51 [252]. S. REUTERI *Boiss.* Diagn. Pl. or. nov. Ser. ii. 1, p. 82 (1853).

Subgenus SPERGELLA.

52 [255]. S. LINNÆI *Presl*, Rel. Haenk. ii. p. 14 (1835).

53 [256]. S. NIVALIS *Fries*, Novit. fl. Suec. iii. p. 31 (1842).

54 [257]. S. SUBULATA *Presl*, Fl. Sic. p. 158 (1826).

55 [258]. S. NODOSA *Fenzl*, Verbreit. Alsin. tab. ad p. 18 (1835).

XVI. HONCKENYA.—*Ehrh.* Beitr. Naturk. Bot. ii. p. 180; *Meissn.* Pl. Vasc. Gen. p. 25 (1837); *Endl.* Gen. Plant. p. 966 (1840); *Ledeb.* Fl. Ross. i. p. 357 (1842); *Gren. & Godr.* Fl. de France, i. p. 255 (1848); *Willk. & Lange*, Prodr. iii. p. 613 (1878).

*56 [247]. H. PEPLOIDES *Ehrh.* Beitr. Naturk. Bot. ii. p. 181 (1788).

XVII. ALSINE.—*Wahlenb.* Fl. Lapp. p. 127; *Fenzl*, in *Endl.* Gen. Plant. p. 965; *Boiss.* Fl. Orient. i. p. 669; *Willk. & Lange*, Prodr. iii. p. 606; *Engl. & Prantl*, Natürl. Pfl. iii. abt. 1 b, p. 82; *Parl.* Fl. Ital. ix. p. 578.

*57 [248]. A. SEDOIDES *Fröl.* in *Koch*, Syn. fl. Germ. p. 114 (1837).

*58 [240]. A. STRICTA *Wahlenb.* Fl. Lapp. p. 127 (1812).

*59 [239]. A. RUBELLA *Wahlenb.* l. c. p. 128, t. 6 (1812).

*60 [238]. A. VERNA *Wahlenb.* l. c. p. 129 (1812).

*61 [241]. A. TENUIFOLIA *Crantz*, Instit. Herb. ii. p. 407 (1766).

XVIII. SPERGULA.—*Linn.* Gen. Plant. (ed. 1) p. 133; *Benth. & Hook.* Gen. Plant. i. p. 152; *Boiss.* Fl. Orient. i. p. 131;

Willk. & Lange, Prodr. iii. p. 161; *Engl. & Prantl*, Natürl. Pfl. iii. abt. 1 b, p. 85; *Parl.* Fl. Ital. ix. p. 610.

62 [259]. S. ARVENSIS *Linn.* Sp. Plant. (ed. 1) p. 440 (1753).

XIX. SPERGULARIA.—*Pers.* Syn. Plant. i. p. 504; *Benth. & Hook.* Gen. Plant. i. p. 152; *Boiss.* Fl. Orient. i. p. 732; *Willk. & Lange*, Prodr. iii. p. 162; *Parl.* Fl. Ital. ix. p. 615; *Robinson*, in Proc. Amer. Acad. xxix. p. 309 (1894).

Species Monotocæ.

*63 [260]. S. RUBRA *Pers.* l. c. p. 504 (1805).

*64 [261]. S. SALINA *Presl*, Fl. Cechica, p. 95 (1819).

Species Polytocæ.

*65 [262]. S. MEDIA *Pers.* l. c. p. 504 (1805).

*66 [263]. S. RUPICOLA *Lebel*, in Mem. Soc. Sc. Nat. Cherb. vii. p. 274 (1860).

XX. POLYCARPON.—*Loefl.* Resa Spansk. Länd. p. 7; *Benth. & Hook.* Gen. Plant. i. p. 152; *Boiss.* Fl. Orient. i. p. 735; *Willk. & Lange*, Prodr. iii. p. 162; *Engl. & Prantl*, Natürl. Pfl. iii. abt. 1 b, p. 86; *Parl.* Fl. Ital. ix. p. 623.

67 [264]. P. TETRAPHYLLUM *Linn.* Sp. Plant. (ed. 2) p. 131 (1762).

NOTES AND REMARKS ON THE FOREGOING LIST.

7. *Silene inflata.*—The reasons for keeping up this old name are given *in extenso* elsewhere. Prof. Ascherson points out that if the oldest specific name is to be retained, the name of the common bladder campion should be *Silene venosa*, i.e., *Cucubalus venosus* Gilib. [1782]; but I find that a still earlier name is *Cucubalus angustifolius* Mill., Gard. Dict. ed. viii. (1768).

9. *S. gallica.*—This is much more widely distributed than the plant known as *S. anglica*, and is the one selected by Rohrbach as the type of the species.

13. *S. italica.*—I have received living specimens of this plant from Hythe, in Kent; and it seems to occur in other localities in sufficient quantity to be considered as a British plant. It was long ago recorded by Peete under the name of *S. patens.*

19. *Coronaria Flos-cuculi.*—The genus *Coronaria* was much more clearly defined than *Lychnis*, and it is to be regretted that Linnæus did not keep it up in *Species Plantarum.* It has, however, been revived by Alexander Braun, and taken up by Garcke in the successive editions of his *Flora von Deutschland.*

21. *Moenchia quaternella.*—The genus was founded by Ehrhart on the Linnean *Sagina erecta.* As this name was given to it to distinguish it from *S. decumbens*, and as, moreover, Ehrhart was quite justified in choosing a suitable specific name, there is no occasion to displace it by Smith's much later name of *M. erecta.*

23. *Cerastium pumilum.*—Mr. Arthur Bennett is disposed to regard this plant as an endemic species. Though Belgian speci-

mens under this name seem to belong to *C. tetrandrum*, yet Sardinian specimens of *Cerastium pentandrum* Mor. (non Linn.), and Sicilian specimens gathered sufficiently far from localities with sandy soil, closely agree with specimens of the English plant.

30. *Malachium aquaticum.*—An earlier name is *Myosoton aquaticum* Moench (1794).

32. *Stellaria cerastoides.*—I have followed Boissier and Enrico Tanfani in restoring this species to *Stellaria;* but in Parlatore's MS., utilized by the latter botanist in the compilation of the *Flora Italiana*, it is described under *Cerastium.*

41. *Arenaria leptoclados.*—M. François Crépin has observed that this plant, growing in similar localities to those where *A. serpyllifolia* is found, seems quite distinct, and that its characters are fixed and constant.

46. *Sagina Boydii*—It is probable that further examination of living specimens of this genus will result in a satisfactory reduction of species grouped under two types, with respectively tetramerous and pentamerous flowers.

47. *S. apetala.*—I have pointed out in this Journal (1890, p. 294) that Arduino first named and described this species; though the correction is not noted in recent floras.

56. *Honckenya.*—This genus is so frequently maintained as distinct from *Arenaria* in different European floras, that it is desirable that the alternative name for *Honckenya*, Willd. (a Tropical African genus of *Tiliaceæ*) should be definitely substituted for it. One of the species has already been named by Decaisne *Clappertonia ficifolia*, and I would propose for the other the name of *C. minor* (= *H. minor* Baill.).

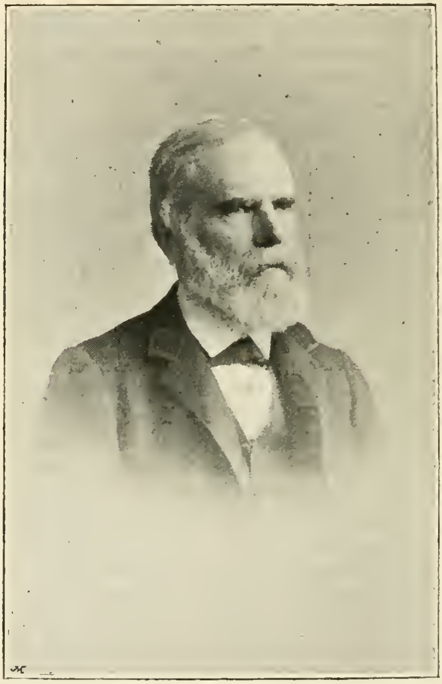
59. *Alsine rubella.*—This plant is frequently cited (Nyman, &c.) as *A. hirta* Hartm., but there is no reason for displacing the name given to the plant by the botanist who re-established the genus.

66. *Spergularia rupicola.*—This plant is certainly conspecific with a Corsican sand-spurry, *S. macrorrhiza* Marsilly (not of Gren. & Godr., as given in the *Index Kewensis*, who placed it in *Spergula*).

By those taxonomists who do not regard the apetalous orders as phylogenetically heterotypic and distinct from the polypetalous orders, and have intercalated them with these to form the division of *Choripetalæ*, the genera included in *Illecebraceæ* have been placed next to *Caryophyllaceæ*. Some botanists, such as Prof. Ferdinand Pax, in Engler and Prantl's *Natürlichen Pflanzenfamilien*, have followed Endlicher in arranging these genera as subsidiary groups of *Caryophyllaceæ*. The character of free central placentation of the contents of the ovary is generally recognized as one of primary importance, but the systematic position of monochlamydeous genera which are homotypic with the genera of *Caryophyllaceæ* is a matter for further consideration.

MR. F. C. S. ROPER.

Freeman Clarke Samuel Roper, who died at Palgrave House, Eastbourne, on July 28th last, in his seventy-seventh year, was born at Hackney on Sept. 23rd, 1819. He was educated at the Hackney Grammar School, but entered business at a very early age, from which he retired, as the senior member of his firm, in 1874. During the many years that he lived in London, Mr. Roper took a keen interest in scientific pursuits, first in geology, and later in microscopy. In 1868 he took up his residence at Eastbourne, and during the later years of his life he devoted himself almost exclusively to botany.



Twenty-six papers stand under his name in the Royal Society's Catalogue up to 1883, and others were published by him subsequently to that date. A glance through their titles shows that Mr. Roper had a general interest in natural history. His earliest papers deal with the *Diatomaceæ*, of which he published numerous new species in the *Journal of the Microscopical Society* for 1854 and 1858. In these plants Mr. Roper was specially interested; he had a large and valuable collection, which he bequeathed to the Department of Botany of the British Museum—a useful addition to the magnificent series already there. After settling at Eastbourne, he took up the study of the local flora, on which he published various scattered papers, and finally, in 1875, a volume, which was favourably reviewed by Dr. Trimen in this Journal for that year. Numerous notes, chiefly on Sussex and North Wales plants, were contributed by him to our pages. Mr. Roper was also interested in the nomenclature of British plants, and the possession of a fine botanical library enabled him to acquire a considerable knowledge of the literature of botany. He bequeathed his herbarium of flowering plants to the Sussex County Museum at Brighton.

Mr. Roper was an active member of the Eastbourne Natural History Society, of which he was at one time President; he took a prominent part in establishing the local museum and free library, and in many other ways he showed his interest in local affairs. He had been a member of the Linnean Society since 1857. Our readers, many of whom have experienced Mr. Roper's courtesy in transmitting specimens of rare or local plants, will be glad to possess a likeness of their correspondent; for the opportunity of reproducing this we are indebted to Mr. Freeman Roper, who is himself interested in botany, and has contributed to this Journal.

SHORT NOTES.

Maianthemum bifolium in Durham.—I came upon a large patch of this plant—say twenty to thirty feet in extent—in a plantation on a steepish bank near the Derwent under Hunstanworth, on the Durham side of the river. It is just the habitat for it as I remember the plant in Norway, so far as I can judge. The trees about are spruce, larch, oak, birch, &c.; the general undergrowth of the plantation, *Luzula sylvatica*, *Oxalis*, *Geranium sylvaticum*, with male, shield, and oak ferns. The deciduous trees of the plantation not immediately near, besides the above, are sycamore, beech, and mountain ash—no trace of gardener's work, as *Vinca*, rhododendron, and such like. I do not see why it should not be a genuine station. My friend Mr. Howse, of the Newcastle Museum, informs me that a station for the plant near Blanchland—I think probably the place in which I found it—is known to the Rev. Mr. Dunn of that village; he also tells me that the late Mr. Dinning told him he had found it near Rothbury, in central Northumberland, some years ago.—D. Oliver.

Lamarck and De Candolle's Flore Française (ed. 3).—This work was published in five volumes, of which the last constitutes a supplement. In many copies each volume is dated 1815. In the Kew Herbarium copy there is attached to the title-page of vol. i. a letter from Alphonse De Candolle, in which he says that many copies are wrongly dated, and that the correct date for vols. i.–iv. is 1805, *not* 1815; this latter date is correct only for the last volume (the supplement). Many new plants (or at least new names) are described by De Candolle in this work, and the bringing back of the date to the same year as that of Persoon's *Synopsis Plantarum* is important from the priority point of view.

If the Kew Herbarium has got hold of a wrongly-dated copy, how many other public institutions where botanists work are similarly situated? Another point to note is that the work though issued as of five volumes is generally bound in six (vols. i.–vi.), as vol. iv. is twice the size of any of the others; and some authors, in consequence, refer to the supplement volume as vol. vi. I have been referring a good deal to this work lately, and this is how my attention has been drawn to Alphonse De Candolle's letter.—Frederic N. Williams.

[The copy in the Department of Botany is dated throughout 1815.—Ed. Journ. Bot.]

Plants of North Devon.—*Mathiola incana* R. Br. It may be worth putting on record that this plant has escaped from the garden of the lighthouse on Braunton Burrows, and is springing up from self-sown seeds in the vicinity.—*Lathyrus sylvestris* Linn. Occurred on the Tor Walk near Ilfracombe.—*Potentilla procumbens* Sibth. Grew near South Molton.—*Spiræa Ulmaria* Linn. var. *denudata* Presl. Occurred between Mollond and South Molton.—*Pyrus rotundifolia* Bechst. Occurred near Lynmouth.—*Rubus saxatilis* L. This plant, which is not given for N. Devon in *Top. Bot.*, is plentiful in the Watersmeet Valley.—*Solidago Virgaurea* Linn. var. *angustifolia* Gaud. The true plant, with narrow nearly entire leaves, occurred in the Watersmeet Valley near Lynmouth.—*Mentha piperita* Huds. Grew in the stream near Lynmouth, but, as cottages were near, it may not be native.—*Marrubium vulgare* L. var. *apulum* Tenore, *Prod. Fl. Nap.* 34, as a species. This form, which has the stem clothed with a dense white pubescence, occurred rather plentifully at Braunton Burrows. — *Sparganium neglectum* Beeby. Occurred in ditches near Braunton.—G. Claridge Druce.

Melampyrum pratense L. var. hians Druce in North Devon. —This pretty form was the prevailing plant in the picturesque valley known as the Watersmeet above Lynmouth. It is rather singular that our more beautiful bits of scenery, such as the Findhorn side, the Kilmorack Falls near Beauly, the Cree side near Newton Stewart, the pine woods near Grantown, and the Tamar Valley near Weir Head, should be the home of this variety. —G. Claridge Druce.

Dorset Plants.—During a short stay in Dorset at the beginning of last July, we confirmed some old county records, gathered one or two new plants, and added a few localities to those given in the *Flora of Dorset*. *Crambe maritima* L. Still flourishes under a chalk cliff in Weymouth Bay, where for many years it has been known to one of us. The spot is *not* in Lulworth Cove.—*Lepigonum rupestre* Kindb. On chalk by the sea in Weymouth Bay; District C. The *Flora* has no record for the mainland.—*Medicago falcata* L. Several plants by the side of a road between Radipole and Weymouth. New for District C.—*Valerianella mixta* Dufr. This well-marked variety of *V. dentata* is constant on cultivated ground in Portland; but is not noted by Mr. Mansel-Pleydell. — *Orobanche amethystea* Thuill. Growing on *Eryngium maritimum* in blown sand by the Chesil Beach. The *Flora* has but one station, in another part of the county.—

Chenopodium Vulvaria L. Sandy hollows on the Chesil Beach; and on waste ground with the next species.—*C. ficifolium* L. Two plants on waste ground between Weymouth and Radipole. This spot must be close to that mentioned by G. S. Gibson, who seems to have been the only other recorder of the species in West Dorset.—*Juncus compressus* Jacq. Occurs plentifully in a small pasture between the Fleet and Wyke Regis. Mr. A. Bennett considered the specimens to be probably the var. *coarctatus* Meyer, not before detected in Great Britain. The *Flora* contains no certain station for this plant. Bell-Salter wrote that it was "very common in the neighbourhood of Poole," where, however, it has not been observed by later botanists. —*Scirpus pauciflorus* Lightf. We have specimens from a swampy spot by a spring towards the Bill of Portland. This summer the place was dry, and the plant did not show.—*Carex dioica* L. Plentiful in a bog about half-way between Wareham and Corfe Castle, at a considerable distance from the two other recorded localities. In many plants the barren spikes had fruits at the base; a form which would seem to be somewhat unusual, Dr. Boswell Syme, in *E. B.* ed. iii., observing that he had never met with it, though Prof. Babington appeared to have done so. This form was seen also last year in Agglestone Bog.—James W. White and David Fry.

Additions to the known Flora of the South Ebudes, v.-c. 102. —During the early days of last September, I paid a visit, for botanical work, to the Island of Islay, which forms, with Jura, Scarba, and Colonsay, the group of the South Inner Hebrides. During my stay I was the guest of Dr. T. F. Gilmour, Port Ellen, the local medical officer, to whom, for his valuable co-operation, I was much indebted. Notwithstanding the advanced time of the year, some 340 phanerogams, ferns, and fern-allies rewarded search. Specimens of all of these were transmitted in the fresh state to Mr. Arthur Bennett, F.L.S., who has placed me under obligation by his kind help, and who informs me that my despatches include eleven species not hitherto recorded as occurring in v.-c. 102. The species are *Buda marina* Dum. var. *neglecta* (Kindb.); *Potentilla procumbens* Sibth.; *Erythræa pulchella* Fr., f. or var.; *Polygonum Raii* Bab.; *Rumex conglomeratus* Murr.; *Juncus alpinus* Vill., which Mr. Bennett says is "good *alpinus*"—*genuinus* of Buchenau, the monographer of the genus—this is the first record of the plant as a Hebridean species; *Sparganium minimum* Fr. (?); *Potamogeton decipiens* Nolte; *Cladium jamaicense* Crantz, abundant, and growing 6 ft. high in Loch Knock; an interesting extension of the range of the species; *Deschampsia discolor* Roem. & Schult., Loch Knock Marsh; *Festuca rubra* L. With the exception of an irregular belt of quartzite along its eastern coast, Islay consists mainly of graphitic mica schist, traversed in the middle of the island and from north to south by beds of a limestone which is quarried and used for commercial purposes. There are no mountains of consequence in Islay—the highest not exceeding 1800 ft. The area of the island (150,000 acres) consists chiefly of moorland, yet Islay is the richest and most productive of the Hebrides, and, apart from its coast-line, has considerable variety of situation for its indigenous vegetation.— A. Somerville.

IMPATIENS BIFLORA IN BERKS.—I have for the past four years met with this plant in abundance near Newbury on the borders of the Enborne stream, which forms the southern boundary of Berks. It seems to have been originally introduced from Milford Lake, Highclere Park, where it was planted (see Mr. Townsend's *Flora of Hampshire*, p. 77). From Milford it appears along the Enborne for a distance of some miles, being plentiful at Wash Water and Newtown. Here the plant has become well established.—A. B. JACKSON.

NOTICES OF BOOKS.

Conspectus Floræ Fennicæ. Pteridophyta—Monocotyledoneæ. Auctore H. HJELT. (Acta Societatis pro Fauna et Flora Fennica. Vol. V. 1888–1895.)

IN this very good Flora of Finland (comprehending Finland proper and Russian Lapland) are matters of much interest to British botanists; combinations among *Carex*, for instance, quite new, no doubt foreshadowing the arrangement that will be adopted in the 12th edition of Hartmann's Scandinavian Flora. As seven years have been occupied in publishing these parts, it is clear that a considerable time will be occupied before the rest of the Flora will be finished, so that it may be well to say a few words on these and the annexed "Notæ Conspectus Floræ Fennicæ." This latter consists of a short Latin introduction, followed by a very full list of books, papers, MSS. sent to the author, &c., with explanations of abbreviations and signs used.

One of the features of the Flora is the care with which reported plants are sifted as to their authenticity, and a careful reference to what seems to be the true state of nativity in the country.

Varieties are fully treated, separately for the species, for localities, &c. For example, the habitats of *Pinus sylvestris* occupy four pages, followed by eight closely printed pages of notes on the species and its varieties occurring within the limits of the Flora. The excellent maps that were given with the *Herbarium Floræ Fennicæ* are also given with this.

We may take *Equisetum arvense* L. as an example of the treatment afforded to each species. After the name, a general indication of the distribution is given, then references to the general indications of distribution in various books, always applied locally; then follow the habitats under the provinces (twenty-nine in number), following which are given nine varieties, with their stations, and remarks on hybrids, &c.

In the third part the "Carices distigmaticæ" are begun; here the treatment is even more complete than in other genera, *C. salina* occupying eight pages, treated under the following heads:—

C. salina * *cuspidata* Wahlenb.
  α. *kattegatensis* Fr.
    f. *ostrobottnica* Almq.
    f. *hæmatolepis* Drej.
    f. *filipendula* Drej.

β. borealis Almq.
f. *discolor* (F. Nyl.).
C. salina * *mutica* Wahlenb.
α. subspathacea (Drej.).
f. *curvata* Drej.
[†] f. *nardifolia* Wahlenb.
β. flavicans (F. Nyl.).
C. rigida × *salina* * *cuspidata* var. *hæmatolepis* [= *C. rigida* var. *longipes* Læst.]
C. rigida × *salina* * *mutica* var. *flavicans* [= *C. arctophila* F. Nyl.]
C. salina × *vulgaris juncella* [= *C. spiculosa* F. Nyl.]
C. aquatilis × *salina* * *cuspidata* [= *C. halophila* F. Nyl.]

Whether this treatment of *C. salina* simplifies matters I much doubt; it is brimful of long written combinations that might be made, with the opportunity of appending one's name to each.

I hope that Mr. C. B. Clarke will see his way to some simple way of expressing these different forms under subspecies. The work of having to notify a correspondent of having received or found a single specimen with five long names in combination is too much for this short life.

That mythical plant *C. stygia* Fries is disposed of thus:—"F. Nylander's example in Fries's herbarium of *C. stygia* from Hibinä is *C. pulla* (Th. Fries, *Iaktt.* 200). An example in Fischer's herbarium is *C. limosa*, according to Treviranus in *Moscow Bull.* 1863, 542." A curious commentary on this is found in a series of *Carex limosa* kindly sent me by Mr. Duncan from the Outer Hebrides (Harris). I was surprised at the amount of variability these specimens exhibited, and among them were two examples from which the drawing of *C. stygia* in Andersson's *Scandinavian Cyperaceæ* (t. 7, fig. 71 (1849)) might well have been made. I have before remarked the likeness of some *limosa* forms to *C. pulla* Good.

No doubt the Carices show a large amount of work on the part of Dr. Almquist, but I think that there is considerable need among such species as *salina* for cultivating the forms. I have noted that *C. kattegatensis* Fries grown almost submerged in water varies greatly in the glumes, so much so that isolated examples might be taken and referred to *C. mutica;* and I find that, if kept in a pot, the stems are shortened, and the leaves are lengthened, the colour also becoming greener than in the native Caithness form.

ARTHUR BENNETT.

The Botany of Ayrshire (by Parishes), from original investigation.
Ardrossan : A. Guthrie & Sons. 1896.

UNDER this title Mr. John Smith, of Monkredding, Ayr, has published an interleaved list of Ayrshire plants. Some of the species recorded are not to be found in the second edition of *Topographical Botany*, although also given for Ayrshire in Mr. P.

[†] This is an error. I have seen an original specimen from Wahlenberg in the Boott Herbarium at Kew, and that specimen is certainly *C. juncella* Th. Fr. = *C. vulgaris* var. *juncella* Fr.

Ewing's list. Probably many of these are correct, but from the station given for *Viola laetea* Sm., one is tempted to suggest whether such a form of *V. canina* as passed for "*lactea*" at Yarmouth may not rather be the plant. I believe one error has crept in, *i.e.* "*Sium latifolium* West Kilbride"; the authority given knows nothing of that plant having been gathered there, and specimens I have seen thence are a large state of *S. erectum* (*S. angustifolium*). Is *Scrophlularia umbrosa* so common in Ayr? "*Mentha pratensis* Sole" probably means *M. gentilis* L. An interesting note on *Salix herbacea* L. is worth quoting: "It has two sets of leaves during the season, the first set loaded with galls, the second set entirely free from them. If it were not for the second set, it would certainly cease to exist in a short time." I suppose this must be a local habit; or is such a fact generally known? "*Carex ovalis* var. *bracteata* Syme. This is not a good variety, as both kinds are found springing from the same root, still its long bract gives it a very different appearance from *ovalis*." One is greatly puzzled to know what *Sparganium acutifolia* is. Mr. Smith puts no authority after it. Is it a new species? if so, there is no description. As the other species are duly credited with authorities, it would seem that the above must be the explanation. *Potamogeton filiformis* Pers. is recorded from Ardrossan. I have seen *P. flabellatus* (not so recorded here) from that place; but of course *filiformis* is not unlikely to occur, though a critical plant to determine. *P. zosterifolius* Schum. is recorded; if this is correct, it is a notable addition, as the species is only known to occur in Forfarshire: Dr. White was never able to confirm the Perthshire record, though the species was diligently sought by the late Mr. Sturrock.

Here and there the author gives the names of moths and butterflies whose caterpillars feed on the various species. He does not confirm one interesting species, *i.e.*, *Corallorhiza innata*, reported in the *British Flora* from "sandy places near the sea, by Irvine, Mr. Goldie"; in the first edition it reads, "sandy places near the sea close to Ayr, Mr. Goldie." Mr. Watson, though he accepted the record in *Cybele Britannica*, doubted it in *Topographical Botany*.

A. B.

Die Protrophie, eine neue ebensgemeinschaft in ihren auffälligsten erscheinungen. Von ARTHUR MINKS. Berlin (Friedländer & Sohn). 1896.

IN one of his former works on the morphology and biology of lichens, Dr. Minks has described amongst these plants a form of symbiosis, to which he gives the name of "Syntrophie." He believes that many of the species of lichens as we now know them are the result of an association, in this form of symbiosis, of two or more distinct species. In the present work he states that there occurs amongst lichens yet another form of symbiosis, to which he gives the name of "Protrophie." The results of "Protrophie" are very similar to those of "Syntrophie," but while in the latter case the symbiosis is a permanent one, in the former the symbiosis only lasts during the earlier stages of existence of the dominant member of the association.

On account of the originality of his views, we should have expected Dr. Minks to bring forward strong evidence for the existence of this form of symbiosis. This he can hardly be said to have done. In fact, he does not seem to have used those methods of investigation, such as pure cultures, from which the most trustworthy evidence could be obtained. The work is without figures.

V. H. B.

ARTICLES IN JOURNALS.

Annals of Botany (Sept.). — H. Wager, 'Structure and Reproduction of *Cystopus candidus*' (2 pl.). — E. A. Burt, 'Development of *Mutinus caninus*' (2 pl.). — D. T. MacDougal, 'Mechanism of curvature of tendrils' (1 pl.). — W. J. V. Osterhout, 'Life-history of *Rhabdonia tenera*' (2 pl.). — S. H. Vines, 'Suction-force of transpiring branches.' — E. Sargant, 'Formation of sexual nuclei in *Lilium Martagon*' (2 pl.). — J. B. Farmer, 'On Fertilization, and segmentation of spore in *Fucus*.'

Bot. Centralblatt (No. 37). — H. G. Simmons, 'Beiträge zur Flora der Faeroer.'

Bot. Gazette (Aug. 31). — L. Kahlenberg & R. H. True, 'Toxic action of dissolved salts and their electrolytic dissociation.'— F. D. Heald, 'Toxic effect of dilute solutions of acids and salts on plants' (1 pl.).—C. Robertson, 'Flowers and insects.'—W. Deane & B. L. Robinson, *Viburnum Demetrionis*, sp. n. (1 pl.).—B. L. Robinson & J. M. Greenman, *Nephropetalum*, n. gen. (*Sterculiaceæ*).

Botaniska Notiser (häft 4). — G. O. Malme, 'Nya bidrag till Södermanlands Hieracium-flora.' — Id., 'Lichenologiska notiser' (*Rinodina*).—M. Brenner, 'Mosser insamlade i Kajana Österbotten och angränsande delar af Nova Österbotten och Norra Käreleu.'— Id., *Euphrasia tenuis* & *E. micrantha*.

Erythea (Sept.). — W. A. Setchell, *Eisenia arborea*. — E. L. Greene, '*Rhamnus* in N. America.'— A. Eastwood, 'Alpine flora of Mount Shasta.'

Gardeners' Chronicle (Sept. 5). — F. Kränzlin, *Acanthophippium eburneum*, sp. n.—C. T. Druery, *Scolopendrium crispum*.—(Sept. 19). F. Kränzlin, *Dendrobium Jennyanum*, sp. n. — C. T. Druery, 'Fern buds and bulbils.'

Journal de Botanique (Sept. 1). — L. Géneau de Lamarlière, 'Muscinées du Nord de la France' (cont.). — A. Franchet, 'Saxifragaceæ, Crassulaceæ, et Combretaceæ novæ e Flora Sinensi' (concl.).

La Notarisia ("Jan.-Mars"). — É. de Wildeman, 'Flore Algologique du département de la Meuse.'

Oesterr. Bot. Zeitschrift (Sept.). — J. Hoffmann, 'Anatomie der Arten der *Sempervivum*.'—F. F. R. v. Wellheim, *Thorea ramosissima*

(1 pl.). — A. Hausgirg, 'Zur Kenntnis der gamo- und karpotropischen Blütenbewegungen der Gräser.'—J. Tobisch, 'Zur Pilzflora von Kärnten' (concl.). — F. Arnold, 'Lichenologische Fragmente' (cont.).

BOOK-NOTES, NEWS, &c.

The Religious Tract Society has issued, under the title *How to Study Wild Flowers*, a neat little half-crown volume by the Rev. George Henslow. "The object of the book is to enable students to rapidly acquire an accurate knowledge of typical British wild flowers"; and this object it seems likely to fulfil, though we trust those who use it will not follow the author in his employment of the split infinitive. The treatment is original, interesting, and, in most respects, accurate; though we have commented on p. 422 on the erroneous derivation given for the name "London Pride." The "artificial key to the orders and genera" has a very terrifying appearance. There is a great deal of information dealing with fertilization and kindred subjects, not generally met with in books of this kind, as well as an excellent index—only one, we are glad to say—in which everything is included. Mr. Henslow's information on popular matters is, however, hardly to be trusted: he says of *Sambucus Ebulus*, for instance, "it is sometimes called dane-wort, being supposed to have been introduced by the Danes," but the name has no reference to the "supposed introduction" of the plant. We much doubt whether *Lythrum* was ever "a popular drug." The illustrations are evidently from two sources, one good, the other bad; they are in many cases inaccurately named—*e. g.* those lettered *Gentiana Pneumonanthe*, *Solanum nigrum*, *Daphne Mezereum* do not represent those species. The book, however, is sure to become popular, and no doubt these slips, as well as occasional misspellings, will be corrected in the next edition.

In the last number (part 5, vol. i.) of the *South Eastern Naturalist*, Mr. George Dowker has a "Note on *Silene dichotoma*—a plant new to Britain," which he found in an arable field near Wingham Hill, Kent, in 1887. We do not know in what sense the phrase "new to Britain" is to be understood: the plant is certainly not native, and has often been recorded as a casual in these pages and elsewhere. In the British Herbarium of the Department of Botany we have specimens from Hartlepool (1873), Croydon (1874), Kingswood, Gloucestershire (1882), York (1880), Albury (1893), S. Devon (1894), and Bedfordshire (no date).

The Seventh Annual Report of the Missouri Botanic Garden contains three important papers on United States plants; the first on the *Juglandaceæ* by the Director, Dr. Trelease, illustrated by 25 plates; the second on the Agaves, by A. Isabel Mulford, with 38 plates; and the third on the Ligulate Wolffias, by C. H. Thompson, with 3 plates. There are, besides these, numerous illustrations and other plates of purely ornamental description, such as that of

"Edelweiss in the rockery"; and the general air of lavishness about the Report makes us wish that our institutions in England had as ample funds at their disposition as are evidently forthcoming in connection with the Shaw School of Botany. We note that the Gardens are in one respect in advance of Kew, as they possess a Handbook, which is largely sold to the public. Dr. Trelease also contributes a Catalogue of the valuable "Pre-Linnean Library" presented to the Gardens by Dr. Sturtevant in 1892.

THE *Bulletin of Miscellaneous Information* issued in connection with the Royal Gardens, Kew, is not, as we had concluded, defunct. A number bearing on its front the fictitious date "March and April, 1896," appeared at the end of August. It is mainly made up of somewhat belated extracts from Foreign Office Reports, and odds and ends of official correspondence, but contains also an interesting paper on "Myrrh and Bdellium," to which, although written in the first person, no author's name is appended. No new species are described in this issue, so the inaccuracy in dating is less mischievous than in former numbers. The cover still enumerates Mr. Jackson's Index among "works in preparation at the Royal Gardens, Kew"; but we regret to see that the long-delayed continuation of the *Flora of Tropical Africa* finds no place in the list.

MR. HIERN is making steady progress with his enumeration of the Welwitsch collections. The work is in print as far as *Leguminosæ*. It will contain a considerable proportion of new species, and a large number of observations from Welwitsch's full and careful MS. notes, a copy of which, it will be remembered, accompanies the magnificent set of his plants in the British Museum. The catalogue will form an important contribution to our knowledge of West African botany.

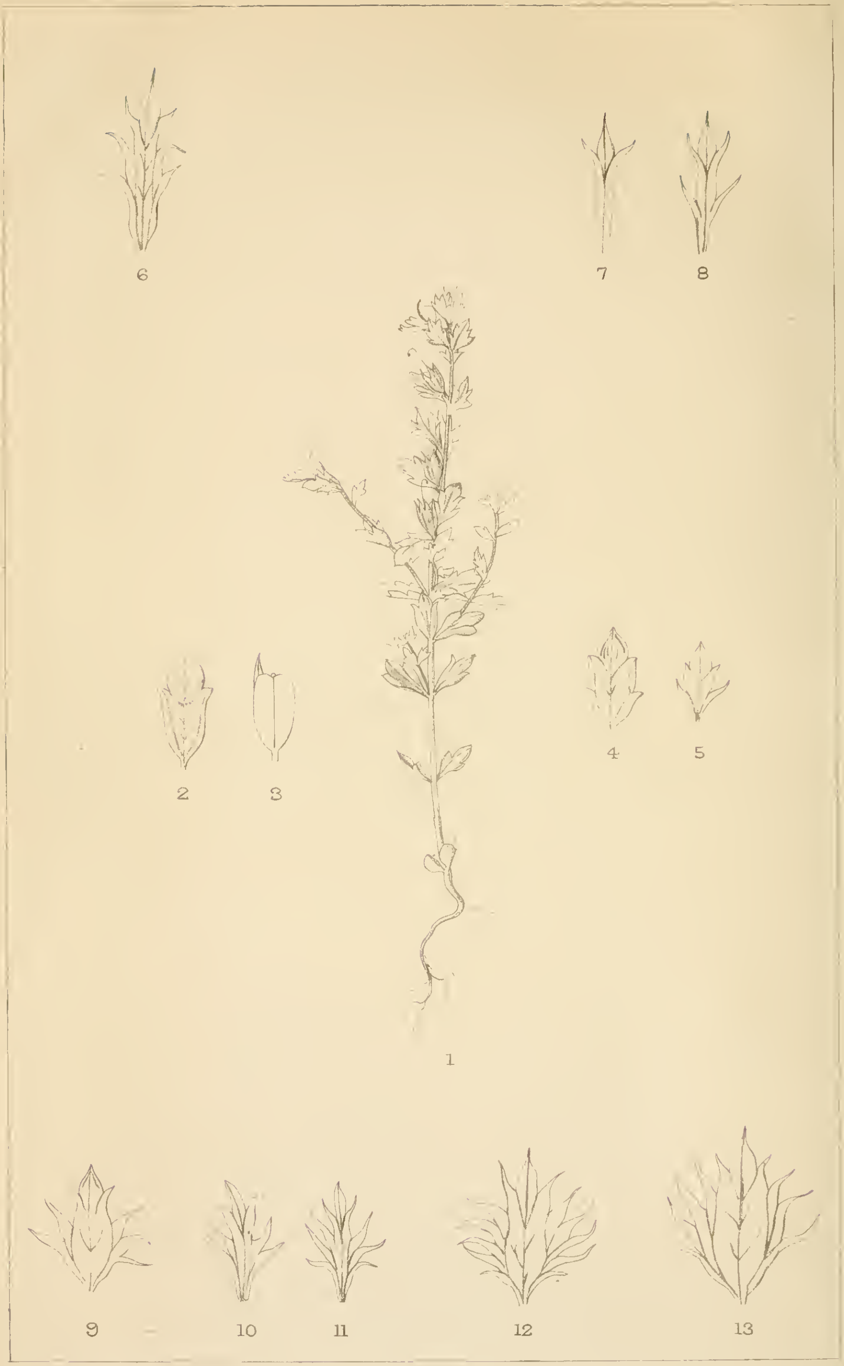
HERR RUDOLPH SCHLECHTER, whose contributions to our knowledge of South African plants are well known to our readers, is making good use of his time during the expedition in which he is now engaged. Writing from Cape Town on May 9th, he announces that he has already collected about 1200 species; a trip to Elim in the Bredasdorp district afforded a very interesting collection, containing a large proportion of novelties. Even in the well-worked south-western districts, Herr Schlechter considers that his novelties average about ten per cent. Writing from the camp at Attyo, on his way to Namaqualand, he speaks of other novelties, and adds: "At present I have to make my way through a very bare region, where they have not had any rains for about four years. It is terrible to see the results of this drought. My cattle are suffering and getting thinner every day, but in about three days' time I shall be where they have had good rains. The plants in this dry region are few in number, but very interesting, and mostly, of course, of a succulent nature. As I hear the rains have only fallen in the southern part of Namaqualand, I may not be able to get as far north as I had hoped; but as it is a part which has been very little explored, it should yield a good proportion of novelties."

British botanists will be interested in the rearrangements of *Caryophyllaceæ* and *Cyperaceæ* (excluding *Carex*) which Messrs. F. N. Williams and C. B. Clarke respectively contribute to our present issue. It is unnecessary to say that we demur to certain particulars of the proposed revisions; but the views of experts on the two orders cannot fail to be of interest. We must enter a protest against Mr. Williams's spelling the genus which Ehrhart, its founder, called *Honkenya*. Mr. Williams informs us that he has "taken a good deal of time and trouble in hunting up the proper spelling of Honckeny's name," which would seem to imply that biographical research will have to be added to the already numerous qualifications necessary for the ascertaining of correct nomenclature. Mr. Williams's action appears to us not in accordance with the Decandollean "Laws," and is a reopening of the *Cinchona* v. *Chinchona* question, which we thought had been decided by the general consent of botanists.

Miss Woolward is to be congratulated on the completion of her great work on *The Genus Masdevallia;* we hope to say more about it on a future occasion.

The last part ("Anno VI, fasc. 2°, 1896"—not otherwise dated) of the *Annuario del R. Istituto botanico di Roma* is mainly occupied by contributions to our knowledge of the botany of Somali-land. Dr. Lindau describes the *Acanthaceæ* (with two new genera, *Leucobarleria* and *Ruspolia*); Drs. Hennings and Bresadola the Fungi; Dr. Gilg the *Capparidaceæ* and *Thymeleaceæ;* and Signor Chiovenda the Grasses—this last paper being illustrated by thirteen plates: these might, we think, well have been of the size of the pages of the text, as in their folded form they are inconvenient for reference. It is to be regretted that no date of publication is given on the part; so many botanists are now simultaneously publishing descriptions of new African plants that every precaution should be taken to avoid the possibility of future confusion with regard to priority.

Thomas Beesley was born on March 28th, 1818, at Banbury. After his apprenticeship he commenced business in 1844 as a chemist and druggist at Chipping Norton. On the retirement of his uncle, Mr. Henry Beesley, he succeeded to his business at Banbury, in which he remained until his retirement in 1887. Here he amassed a considerable collection illustrating the geology of the district, as well as an extensive library, and a herbarium of British plants, which is now in the possession of Mr. G. C. Druce, who received much help from Mr. Beesley in the compilation of the *Flora of Oxfordshire*. Beesley contributed a list of plants to the *History of Banbury*, prepared by his uncle, Alfred Beesley, in 1841. This list, comprising nearly 500 species, besides a large number of Cryptogams, was largely quoted by Mr. H. C. Watson in his *Topographical Botany;* in fact, it was the chief source of the records from Oxfordshire in that work. Mr. Beesley died at Banbury on the 15th of May. These particulars are taken from the sketch of his life contributed by Mr. G. C. Druce to the *Pharmaceutical Journal* for Sept. 5th.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Fred^k Townsend del
R.Morgan lith.
West Newman imp

Euphrasia Salisburgensis *Funk* & varieties.

EUPHRASIA SALISBURGENSIS Funk, NATIVE IN IRELAND.

By F. Townsend, M.A., F.L.S.

(Tab. 363.)

The Rev. E. S. Marshall has sent me specimens of a *Euphrasia* which are undoubtedly *Euphrasia Salisburgensis* Funk. They were gathered by him on limestone rocks south of Lough Mask, Co. Mayo, on July 15th, 1895, his reference number being 1607. Mr. Marshall writes that he believes the plant was fairly plentiful where found, about two miles south of Clonbur, on low limestone cliffs bordering Lough Mask, at an altitude of from 80 to 90 ft. above sea-level.

This discovery adds another species to the interesting group of plants (members of an ancient and existing continental flora) still flourishing on the Continent, but as regards the British Islands only surviving at the present time in Ireland, and principally in the western and south-western counties.

Euphrasia Salisburgensis Funk is a member of a distinct division of the genus hitherto unrepresented in the British Islands. It is distinguished from all other British forms by its narrow leaves and bracts, with comparatively few lateral usually aristate teeth. The Irish plant has only two teeth on either side of the upper leaves and bracts.

Prof. Wettstein, in his monograph of the genus, published this year, and noticed at p. 369 of the *Journal of Botany* for August, divides all the forms of the genus into sections, subsections, and groups, as follows:—

Sectio I. — Eueuphrasia Wettstein. Folia indivisa, dentibus utrinque acutis vel obtusis 1–10. Antheræ pilosæ. — Species Europæ, insularum Azoricarum, Asiæ extratropicæ, Americæ septentrionalis, Australiæ et Novæ Zelandiæ.

Subsectio I. — Semicalcaratæ Benth. Species hemisphærii borealis, semper annuæ, antheræ mucronatæ, duorum staminum posticorum breviorum loculus alter semper longius calcaratus.

§ 1. *Parvifloræ.* Foliorum longitudo latitudinem in maximo duplo superans. Capsulæ margine semper erecto ciliatæ. Corollæ tubus fine anthesis non elongatus, itaque corollæ omnes longitudine æquali.

§ 2. *Grandifloræ.* Foliorum longitudo latitudinem in maximo duplo superans. Capsulæ margine semper erecto ciliatæ. Corollæ tubus fine anthesis elongatus, itaque corollæ initio anthesis breviores quam fine anthesis.

§ 3. *Angustifoliæ.* Foliorum longitudo latitudinem 2–30-plo superans, folia itaque non ut in § 1 et 2 ovata, vel ovato-elongata sed linearia vel lanceolata. Corollæ tubus in speciebus nonnullis fine anthesis non elongatus, in aliis elongatus.

Subsectio 2.—Australes Benth. Species Australasicæ vel Novo-

Zelandicæ, plurimæ perennes, nonnullæ solum annuæ, antheræ omnes subæqualiter mucronatæ.

§ 1. *Perennes.*

§ 2. *Annuæ.*

Sectio II.—Trifidæ Benth. Folia trifida, rarius solum ad basin utrinque dente parvo aucta itaque quinquefida. Antheræ glabræ vel glabrescentes. Species extratropicæ Americæ australis.

§ 1. *Perennes.*

Subsection I. includes all the European forms, but the representatives of the genus hitherto recorded as natives of Great Britain and Ireland belong to the first two groups only, viz. *Parvifloræ* and *Grandifloræ*, and there was no representative of the third group, *Angustifoliæ*. Through the discovery of *E. Salisburgensis* we now have in the British Islands representatives of all three groups of *Semicalcaratæ*.

The original description is found in "Nachricht von einigen seltenen gesammelten Pflanzen," in Hoppe, *Taschenbuch* (1794), pp. 184 and 190, H. Ch. Funk, of which the following is a translation:—

"Euphrasia Salisburgensis—a new German plant. It has a great similarity to *E. officinalis*, but as compared with it differs in several points. The leaves are longer and narrower, the teeth are very acute, and they are also patent. The flower is smaller, and the whole plant is smooth" (*Botanische Taschenbuch für die Anfänger dieser Wissenschaft und Apothekerkunst* (1794), Regensburg, p. 190).

In Braune, *Saltz. Fl.* ii. p. 217, t. 1, f. 1 (1797), the plant is described at greater length, headed by a short diagnosis in Latin, *viz.* "Foliis alternis, lineari-lanceolatis, acutis, fere setace-dentatis." Funk is quoted. The locality given is "Am Ofenlochberge, Kapuzinerberge, und Viehberge." The plant is described as branched, the branches alternate, erect. Braune asks, "Is this a var. only?" but he seems to deem it more likely a species, as he found it, he states, growing in sandy ground with *E. officinalis*, the only other species he gives. The plate shows a small plant 4½ in. in height, with six corymbose erect or ascending branches from near the base. The leaves have two teeth on either side.

A figure of *E. Salisburgensis* is also given in Reichenbach's *Deutschlands Flora*, 109, mdccxx, ii. 3–5.

The following is the description as given by Prof. Wettstein in his monograph:—

"Euphrasia Salisburgensis Funk.—Caulis erectus, simplex vel in *parte inferiore ramosus*, 1–30 cm. altus, rubescens, pilis crispulis reversis eglandulosis pubescens, ramis erectis, inferioribus oppositis, superioribus alternantibus. Folia caulina inferiora opposita, *cuneiformia, obtusa utrinque dentibus 1–2 obtusis;* folia caulina superiora alternantia, lanceolata, in parte media latitudine maxima, *longitudine latitudinem 2–5-plo superante, plerumque acutissima, utrinque dentibus aristatis patentibus 2–3.* Bracteæ alternantes latitudine folia caulina superantes, sed eis similes, in triente inferiore latissimæ, utrinque *dentibus 2–5* (*plerumque 3*) *elongatis.* Folia omnia viridia vel præsertim in parte inferiore plantæ rubescentia, *glaberrima* vel in pagina inferiore glandulis sessilibus vel in margine et nervis prominentibus setulis minimis sparsis. Spica initio condensata, fructifera valde elongata. Flores subsessiles. Calyx glaber vel *setulis minutis* obsitus, fructifer modice accretus; dentes lanceolato-triangulares. *Corolla parva* fine anthesis 6–8 mm. lg., labio superiore bilobo, lobis reflexis emarginatis vel denticulatis, labio inferiore 3-lobo, lobis emarginatis, subtus *solum ad basin pilosis.* Corolla plerumque albida labio superiore cæruleo, sed etiam tota cærulea, purpurea vel violacea. Capsula cuneato-elongata, truncato-emarginata, calycis dentes subæquans vel superans, *glaberrima* vel solum in parte superiore marginis pilis sparsis brevibus inflexis ciliata. Flowering time from July to late autumn.

"DISTRIBUTION.—Scandinavia (Arctic Norway), (Nyman); Christiania (Blytt); Gothland and Jutland; [Ireland]; in the mountains of middle and South Europe (Pyrenees, Sierra Nevada, Alps, Jura, Carpathians, Balkans, Apennines, Corsica); not unfrequently descending into the plains."

The plant is eminently alpine. Gremli, in *Excursionsflora für die Schweiz*, gives "Alp., Voralp., and Jura." Alp. implies an altitude of about from 3400 to 4900 ft. above sea-level, and Voralp. from 4900 to 7800 ft. I have myself found the plant at an altitude of about 7800 ft. in Switzerland.

For the synonymy I must refer to Prof. Wettstein's *Monograph*, as it is too lengthy to insert here.

As might be expected from an extensive range in altitude as well as from a wide geographical range, several varieties have been noticed. Prof. Wettstein says, p. 226, *Monog.*, they are so numerous that it would be useless to notice them all. He says, as a rule, that in damp localities the leaves [and bracts] are broader, the teeth shorter, and the whole plant smoother; whereas in dry places the leaves [and bracts] are narrower, the teeth longer and more aristate, and the calyx more or less hispid. This description I can endorse.

Dr. Gunther Beck, in *Verh. Zool. Bot. Ges. Wien*, xxxiii, 226 (1883), in describing what he considered a new *Euphrasia*, which he named *E. nivalis* (placed by Wettstein with *E. Salisburgensis*), groups the varieties of *E. Salisburgensis* as follows:—

α. vera. Caule elongato sæpe filiforme, ramosissimo (ad 20 cm. et ultra alto); ramis erectis, principali paulum brevioribus; foliis bracteisque lineari-lanceolatis, paucidentatis; floribus remotissimis.

β. alpicola. Caule humili sæpe crassiore, simplice vel pauciramoso (ut plurimum 10 cm. alto) bracteis latioribus subovatis, spica densiore et breviore.

Among some of the principal named varieties are *E. exigua* Reuter, *E. Soyeri* Timb. Lagr., *E. nivalis* Beck., *E. cupræa* Jord., *E. Corsica* Towns., *E. Soubeiriniana* Timb. Lagr., *E. Salisburgensis* v. *angustifolia* Towns.; but I would again refer to Wettstein's *Monograph* for a more detailed account of these.

On a future occasion I hope to be able to notice at greater length the different forms or subspecies of *Euphrasia* found in the British Islands, but I may take this opportunity of making a few remarks on the notice, evidently written in haste, by Mr. Claridge Druce in the August number of the *Journal*, and already alluded to. He there says eleven species are "stated" by Prof. Wettstein to be found in Britain. I will take in order those species I wish to comment on, as enumerated by Mr. Druce.

"*E. brevifolia* Burnat et Gremli." This name is evidently a slip of the pen for *E. brevipila*. The three localities given in the *Monograph* are Trossachs, Foyers, and Oban. I have not seen Trossachs specimens, but those from Foyers and Oban, collected and communicated by me, are without doubt my *E. borealis*, and it remains to be determined whether *E. borealis* is a distinct form, or whether it should be referred to *E. brevipila*.

E. curta Fries. I am unable to refer either the plant from the Freshwater Downs and St. Catherine's Cliff or the plant from Moreton to this species. The plant from the two first stations I believe to be an abnormal form of *E. nemorosa* Pers. pro var., due to the influence of the sea and exposure which affect numerous plants in the same locality, causing them to be very stunted and tufted.

E. latifolia Pursh. This species has not been found in Britain. The Cumberland station given by Prof. Wettstein is in a high northern latitude, and has no reference to the English county of Cumberland.

E. Kerneri Wetts. Mr. Druce says this "is given for Chelsham, Croydon, by Bennett," which implies that Mr. Bennett named his Chelsham plant *E. Kerneri*. This is not the meaning intended by Prof. Wettstein in his *Monograph*, who says, "England: Chelsham, near Croydon (Bennett, H. Towns.)," which implies that Mr. Bennett's plant was communicated by me; and the Professor adds words to the effect that the two specimens from this locality which I sent him as my *E. Rostkoviana* v. *macilenta* quite represent his *E. Kerneri*.

Explanation of Plate 363.—1. *Euphrasia Salisburgensis* Funk, from Co. Mayo, Ireland. 2. A lower leaf of the same. 3. Capsule of the same with one calyx-tooth in position. 4. Lowest bract of the same. 5. An upper bract of the same. 6. Bract of a typical form of *E. Salisburgensis* from above Mürren, Switzerland, 6000 ft. 7. Bract from a side branch of *E. Salisburgensis* var. *angustifolia* mihi from near Berchtesgaden, Fl. Gall. et Germ. exs. No. 824. 8. Bract from the main stem of var. *angustifolia;* Berchtesgaden. 9. Bract of *E. Salisburgensis β laxa* Reut. MS.; Jura. 10. Lowest bract of *E. Soyeri* Timb. Lagr.; Pyrenees. 11. An upper bract of *E. Soyeri;* Pyrenees. 12. Bract of *E. Corsica* mihi = *E. Salisburgensis* var. *pumila* Cosson (Wettstein). 13. Bract of *E. Soubeiraniana* Timb. Lagr.; Pyrenees. N.B.—All except No. 1 are magnified. In these drawings the veining of the bracts is a little too distinct.

THE EARLIEST RECORD OF ARCTIC PLANTS.

By Theo. Holm.

[The following paper, contributed by Mr. Theodore Holm to the Proceedings of the Biological Society of Washington (x. 103–107, June 15th, 1896), is especially interesting at the present time; and as, from its place of publication, it is not likely to come under the notice of European botanists, we think it well to reproduce it in these pages. A comparison of Mr. Holm's paper with Martens' original shows that the determinations are very carefully done.—Ed. Journ. Bot.]

Through the courtesy of Dr. Edw. L. Greene my attention has been called to the fact that our knowledge of the Arctic flora is not of recent date. The invaluable botanical library which Dr. Greene has accumulated, and which is now located in the Catholic University in Washington, D.C., contains a vast number of old books, which are truly a great boon to the working botanist. It was in this library that Dr. Greene showed me a short chapter in Ray's *Historia Plantarum*,* wherein is enumerated and described some plants collected in Spitzbergen more than two hundred years ago.

The chapter referred to is headed "Plantæ Spitzbergenses a Frederico Martens Hamburgensi in Itinerario suo observatæ delineatæ et descriptæ." When I examined the names "*Aloefolia florum capitulis rotundis*," &c., and the accompanying descriptions, which latter might just as well have represented almost any plant outside the Arctic, I felt discouraged. The title of the chapter, however, gave the clue, *i.e.* the original record by Martens, who was said to have not only described these plants, but even to have figured them.

This is the work which Ray mentions in a letter to Dr. Hans Sloane,† where he expresses his great admiration of the careful observations made by Martens. Martens' own account appeared in his famous little book *Spitzbergische oder Groenlandische Reise Beschreibung gethan im Jahr* 1671.‡ Martens was the surgeon of the ship 'Jonas im Wallfisch,' which got as far north as the 81st degree of latitude. From here he visited the north-western part of Spitzbergen, from whence he brought home several specimens of animals and plants.

Many of the observations in Martens' book show that he was possessed of unusual energy and skill as a scientific traveller. His voyage was made during a period when Spitzbergen was annually visited by a large number of whalers from various countries in Europe. So great was the traffic, that from 1670 to 1710 not less than 2289 ships visited this island, killing the vast number of nearly ten thousand whales. I have not been able to find any record of the Arctic flora prior to the period named, so that Martens is believed to have been the first writer on the Arctic flora.

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* Vol. iii., Appendix (1704), p. 226.

† *Correspondence of John Ray*, edited by Edwin Lankester, London, 1848, p. 474.

‡ Hamburg, 1675.

His descriptions of Arctic plants are given in the third part of his book (page 41), *Von den Pflanzen so ich in Spitsbergen gefunden.* The descriptions are accompanied by four plates, illustrating in all fourteen species. Although the diagnoses are somewhat puzzling, they certainly are much more accurate than those given by the learned English botanist; and his drawings, as a supplement, will enable the reader to identify the phanerogams and one of the two algæ.

The first plant which Martens describes is "Kraut mit Aloeblättern" (table G, fig. *a*), which Ray named "*Aloefolia florum capitulis rotundis.*" This plant, judging from the illustration, is undoubtedly *Saxifraga stellaris* L., forma *comosa* Poir. The statement that the flowers form small, flesh-coloured heads ("nudo oculo vix discernendi") would seem to indicate that this plant is the Arctic forma *comosa*, the flowers of which are transformed into small bulblets. Besides this, the basal leaves of the drawing agree better with this than with *S. nivalis* L.

"Eingekerbtes Kleinhauswurtz" (table F, fig. *a*) is well drawn, and represents *Saxifraga nivalis* L. The "Hauswurz" of the Germans is now the popular name for *Sempervivum tectorum*, so that the identification is not so far wrong. Ray has described this plant under the name "*Sedum minus dentatum, capitulis squamosis.*" The flowers are described in this species as having five petals, so that Martens would surely have seen the single flowers of the foregoing species, if there had been any, instead of simply speaking about their forming small heads, a fact which seems to favour the supposition that he meant the bulblets, as I have mentioned above.

Four species of "Hanen-Füssen" ("Crowfoot") are also fully described and accurately figured. One of these, however, is *Saxifraga rivularis* L. (table H [G], fig. *c*). The others are: *Ranunculus hyperboreus* Rottb. (table H, fig. *c*), *R. pygmæus* Wahlbg. (table G, g. *e*), and *R. sulphureus* Soland. (table I, fig. *d*). The *Saxifraga* he describes as having white petals, and the figure given is a good illustration of this species. Ray has named these "*Ranunculi Spitzbergenses.*"

"Löffel-Kraut" is a species of *Cochlearia*, and this name is still the popular one for the plant. It was undoubtedly *C. fenestrata* R. Br., which is so far the only known species from Spitzbergen. Ray, it appears, accepted Martens' identification, but, although he did not find any difference between this and *C. Britanica*, he nevertheless called it *C. Spitzbergensis.*

The "Kraut als Mauer Pfeffer" (table F, fig. *c*) is *Saxifraga oppositifolia* L. "Mauerpfeffer" is now the German name for some *Sedum*, to which the plant shows great resemblance. The flowers are described as purple, which agrees well with this species of *Saxifraga*. Ray called it "*Sedum minimum vermiculatum purpureum Spitzbergense.*"

"Natter-Wurtz" (table I, fig. *a*) agrees well with *Polygonum* *viviparum* L., according to the description and illustration. This plant is very closely related to *Polygonum bistorta*, which is the proper "Natterwurz" of the Germans. Ray came to the same conclusion as Martens and named it "*Bistorta minor Spitzbergensis*."

"Kraut als Maüse-Oehrlein" (table G, fig. *d*) is exceedingly well illustrated and described, and represents *Cerastium alpinum* L., of which the German name is at present "Alpen-Hornkraut." "Mäuseoehrchen" is now used for *Hieracium Pilosella* L., while "Mäusoehrlein," according to Lœselius,* is the name for some species of *Gnaphalium* and *Myosotis*. *Myosotis* is, so far as the name itself is concerned, the only plant to which this name "Mouse-ear" could be applied, as it was by Dioscorides, from the Greek μῦς, a mouse, and οὖς, ὠτός, an ear. The leaves of *Cerastium alpinum* very closely resemble those of a *Myosotis*, so that it can easily be seen how the mistake occurred. "*Auriculæ muris affinis herba Spitzbergensis*" is the name given by Ray to this plant, but his diagnosis, "Supremo cauliculo Flos innascitur albus," is the only feature which is characteristic of this *Cerastium*. Martens has, indeed pointed out the characteristics in a much clearer way.

"Kraut als Singrün" (table G, fig. *b*) represents *Salix polaris* Wahlb. If it were not that the illustration is so good, it would hardly have been possible to identify this plant. "Singrün" is now the name for *Vinca*. The stem is described as knotted and woody, and the leaves as occurring in pairs. The flowers were not seen, and Martens is therefore not certain that the plant belongs to *Pyrola minima*. It is called "*Vinca pervincæ similis herba Spitzbergensis*" by Ray. The leaves of this willow are very small and coriaceous, brilliant green. They occur in about two alternately on each branch, and to a certain extent resemble those of some species of *Pyrola*.

"Erdbeer-Kraut" (table H, fig. *b*) is *Potentilla fragiformis* Willd. The description is very good, and the statement that the leaves only had three leaflets shows that we have this species before us, and not *P. maculata* Pourr., the leaves of which are quinate. The same statement is also given by Ray, "foliis tripartitis divisis . . . . ," who has called it "*Fragariæ affinis Spitzbergensis*."

Two algæ are enumerated under the name "Klippen-Kraütern," of which the figure *b* in plate F represents *Fucus vesiculosus*. The vesicles are described very accurately, and Martens states that he did not observe whether these contained any seeds. His sailors informed him, however, that the small sea snails (Pteropoda), upon which the whales feed, originate from the seeds of this alga. Martens does not seem to have shared this opinion, however, and says that he is inclined to believe that these snails have, like others, originated from eggs!

The large alga (fig. *c* in plate I) is undoubtedly a species of *Laminaria*. [Mr. Murray identifies this with *L. saccharina*.]

Several other plants were observed, but were not collected. Only two of these have been described, but these have not been figured. One of these, "der weisse Mahn," is evidently *Dryas octopetala* L. "Mahn" is undoubtedly a misprint for "Mohn," the common poppy (*Papaver dubium* or *Rhœas*). Since the only poppy that grows on Spitzbergen, *P. nudicaule* L., has yellow flowers, it is not likely that Martens meant this plant, but rather the common white *Dryas*, which is not so very unlike a poppy. The other plant is "der rothe Sauerampffer," which probably was *Oxyria digyna* Campd., now called "Saüerling" by the Germans.

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* Johannes Lœselius, *Flora Prussica*, Regensburg, 1703.

If the list of plants collected by Martens be compared with the most recent publication on the flora of Spitzbergen,* it will be seen that all the species named in the list have actually been rediscovered by later expeditions. As to the locality where they were collected, it appears that they were found in the neighbourhood of Smeerenberg, on the north-western shore of Spitzbergen, designated by Martens as "Harlinger Kocherey."

ADDITIONS TO THE FLORA OF THE ISLE OF MAN.

By Arthur Bennett, F.L.S.

In 1891 Mr. G. A. Holt kindly sent me a series of specimens from the above island; and, when calling his attention to the species they added to the 2nd ed. of *Top. Botany*, I asked him to record them in the *Journal of Botany*. As he has not done this, it seems as well to do so in view of the excursion undertaken to that place in connection with the meeting of the British Association at Liverpool. There are still a good many of the common species (*i. e.* with census numbers from 90 to 112) that have not been yet recorded to my knowledge, and I trust full lists have been made by some of the visitors.

In the following list, where the species named is followed by a ! it means I have seen the plant; where "sp." is noted, that I possess a specimen; in a few other cases the names were given to me by Mr. Holt as having been seen by him.

Papaver dubium.
P. Rhœas.
Viola Curtisii !
Spergularia neglecta.
Geranium columbinum !
Trifolium dubium.
T. filiforme !
Astragalus danicus !
Vicia sylvatica !
Sanicula europæa !
Œnanthe fistulosa !
Scandix Pecten-veneris !
Erythræa littoralis H. Platts, sp.
Veronica Tournefortii.
Orobanche major !
Verbena officinalis, sp.
Echium vulgare, sp.
Statice binervosa !
Atriplex laciniata !
Salicornia herbacea !
Parietaria officinalis !
Alnus glutinosa.
Salix aurita, ex Newbould.
S. repens, ex Newbould.

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* Nathorst, A. G., 'Nya Bidrag till Kännedomen om Spetsbergens Kärlväxter,' Stockholm, 1883, *Kgl. Sv. Vet. Akad. Hdlgr.* xx. No. 6, 88 pp.

Triglochin maritimum !
Potamogeton pectinatus !
Scirpus palustris !
S. maritimus !
S. setaceus, sp.
S. palustris, sp.
S. pauciflorus, sp.
S. fluitans !
Carex pulicaris.
C. stellulata, sp.
C. fulva, sp.
C. distans, sp.
C. binervis.
C. lævigata !
C. sylvatica, sp.
C. glauca, ex Newbould.
C. pilulifera.
C. ampullacea, sp.
C. riparia, sp.
Alopecurus geniculatus.
Aira caryophyllacea.
Arrhenatherum avenaceum.
Koeleria cristata, sp.
Poa annua.
Bromus mollis.
Brachypodium sylvaticum !
Triticum repens, sp.
T. junceum, sp.
Lepturus filiformis, sp.
Allosurus crispus, sp.
Polystichum lobatum !
Asplenium Ruta-muraria, sp.
Hymenophyllum Wilsoni, sp.
Ophioglossum vulgatum, sp.
Lycopodium selaginoides, sp.
Equisetum maximum.
E. arvense.
E. sylvaticum.
E. limosum !

This list makes sixty-three additions to the recorded flora of the island. It is to be regretted that we have not a full record of its flora, lying, as it does, almost equidistant from Ireland, England, and Scotland, and not much farther from Anglesea.

REVISION OF EXTRA-TROPICAL SOUTH AFRICAN ASCLEPIADACEÆ.

By Rudolph Schlechter.

(Continued from p. 421.)

60. Schizoglossum verticillare Schltr. in Engl. Jahrb. xx. Beibl. 50, 25 (1895).
Natal.

61. S. Woodii Schltr. *l. c.* 25 (1895).
Pondoland, East Griqualand, Natal.

62. S. elingue N. E. Br. in Kew Bull. 1895, 149.
Natal.

63. S. robustum Schltr. in Journ. Bot. 1895, 267.
Natal.

64. S. tricuspidatum Schltr. *l. c.* 267.
? Kaffraria.

65. S. Wallacei Schltr. *l. c.* 268.
Orange Free State.

66. S. biflorum Schltr. *Aspidoglossum biflorum* E. Mey. *l. c.* 200. *Schizoglossum venustum* Schltr. in Engl. Jahrb. xx. Beibl. 50, 24 (1895).
Orange Free State, Transvaal.

67. S. exile Schltr. *Lagarinthus exilis* E. Mey. *l. c.* 208. *L. gracilis* E. Mey. *l. c.* 208.
Uitenhage, Kaffraria.

68. S. interruptum Schltr. *Lagarinthus interruptus* E. Mey. *l. c.* 208.
Wittebergen.

XII. Fanninia Harv. Gen. S. A. Pl. ed. 2, 235 (1868).

1. F. caloglossa Harv. *l. c.* 235 (1868) (nomen); Schltr. in Journ. Bot. 1894, 261.
Kaffraria, East Griqualand.

XIII. Stenostelma Schltr. in Engl. Jahrb. xviii. Beibl. 45, 6 (1894).

1. S. capense Schltr. *l. c.* 6 (1894).
West Griqualand, Transvaal.

XIV. Periglossum Dcne. in DC. Prodr. viii. 520 (1844).

1. P. angustifolium Dcne. *l. c.* 520 (1844).
Kaffraria, East Griqualand, Pondoland, Natal, Orange Free State, Transvaal.

2. P. Mackenii Harv. Thes. Cap. ii. 7, t. 111 (1864).
Natal.

3. P. Kassnerianum Schltr. in Engl. Jahrb. xx. Beibl. 51, 40 (1895).
Natal.

XV. Cordylogyne E. Mey. Com. Pl. Afr. Austr. 218 (1837); Dcne. in DC. Prod. viii. 518 (1844); Bth. et Hk. f. Gen. Pl. ii. 759 (1876).

1. C. globosa E. Mey. *l. c.* 218 (1837).
Camdeboo, Wittebergen, Natal, Orange Free State, Transvaal.

XVI. Krebsia Harv. Gen. S. Afr. Pl. ed. 2, 233 (1868); Schltr. in Engl. Jahrb. xx. Beibl. 51, 39 (1895).

1. K. corniculata Schltr. *l. c.* 40 (1895). *Lagarinthus corniculatus* E. Mey. Com. Pl. Afr. Austr. 208 (1837). *Gomphocarpus corniculatus* D. Dietr. Syn. ii. 901 (1840).
Wittebergen, Transvaal.

2. K. stenoglossa Schltr. *l. c.* 40 (1895). *Gomphocarpus* (§ *Krebsia*) *stenoglossus* Schltr. in Journ. Bot. 1894, 257.
Kaffraria.

3. K. carinata Schltr. *l. c.* 40 (1895). *Gomphocarpus carinatus* Schltr. in Journ. Bot. 1894, 258.
East Griqualand.

XVII. Eustegia R. Br.* [in Mem. Wern. Soc. i. 51 (1809); Dcne. in DC. Prodr. viii. 545 (1844); Bth. & Hk. f. Gen. Pl. ii. 765 (1876).

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* [This genus is left blank in Mr. Schlechter's MS.; we have added the species as recorded in DC. Prodr. viii. 545.—Ed. Journ. Bot.]

1. E. HASTATA R. Br. *l. c.*
Cape Colony.

2. E. FILIFORMIS Roem. & Schult. Syst. vi. 120 (1820).
Cape Colony.

3. E. HUMILIS E. Mey. Comm. Fl. Afr. Austr. 221 (1837).
Cape Colony.

4. E. LONCHITIS E. Mey. *l. c.*
Cape Colony.]

XVIII. ASCLEPIAS L. Gen. ed. 1, 64 (1837); Dcne. in DC. Prodr. viii. 564 (1844); Bth. & Hk. f. Gen. Pl. ii. 754 (1876). *Gomphocarpus* R. Br. in Wern. Soc. i. 38 (1809); Dcne. *l. c.* 556 (1844); Bth. & Hk. f. *l. c.* 753 (1876). *Pachycarpus* E. Mey. Comm. Pl. Afr. Austr. 209 (1837). *Xysmalobium* R. Br. *l. c.* 38 (1809); Dcne. *l. c.* 519 (1844); Bth. & Hk. f. *l. c.* 752 (1876).

1. A. FRUTICOSA L. Sp. Pl. 216 (1771). *Gomphocarpus fruticosus* R. Br. *l. c.* 38 (1809); Dcne. *l. c.* 557 (1844).
Cape Colony, Kaffraria, East Griqualand, Pondoland. Natal, Zululand, Orange Free State, Transvaal.

2. A. ARBORESCENS L. Mant. 216 (1771). *Gomphocarpus arborescens* R. Br. *l. c.* 38 (1809); Dcne. *l. c.* 557 (1844).
South-west Cape Colony, Karroo, Albany.

3. A. CRISPA Berg. Descr. Pl. Cap. 75 (1767). *Gomphocarpus crispus* R. Br. *l. c.* 38 (1809).
South-west Cape Colony bis Albany, Kaffraria.

4. A. GRANDIFLORA L. f. Suppl. 170 (1781). *Xysmalobium grandiflorum* R. Br. *l. c.* 39 (1809). *Gomphocarpus grandiflorus* Dcne. *l. c.* 562 (1844). *Pachycarpus grandiflorus* E. Mey. *l. c.* 209 (1837). *P. coronarius* E. Mey. *l. c.* 209 (1837). *Gomphocarpus coronarius* Dcne. *l. c.* 562 (1844).
Uitenhage, Albany, Kaffraria, East Griqualand, Natal.

5. A. UNDULATA Jacq. Enum. Pl. Carib. 17 (1760). *Xysmalobium undulatum* R. Br. *l. c.* 39 (1809); Dcne. *l. c.* 519 (1844). *X. lapathifolium* Dcne. *l. c.* 519 (1844). *Gomphocarpus undulatus* Schltr. in Engl. Jahrb. xviii. Beibl. 45, 10 (1894).
Cape Colony, Kaffraria, East Griqualand, Natal, Zululand, Orange Free State, Transvaal, Delagoa Bay.

6. A. FLAGELLARIS Bol. Herb. Norm. Austro-Afr. ed. 18. *Lagarinthus filiformis* E. Mey. *l. c.* 203 (1837). *Gomphocarpus filiformis* D. Dietr. Syn. ii. 900 (1840); Dcne. *l. c.* 558 (1844). *Asclepias filiformis* Bth. & Hk. f. *l. c.* 753 (1876), nec L.
Karroo, Little Namaqualand, Gross Namaqualand.

7. A. CULTRIFORMIS Schltr. in Engl. Jahrb. xviii. Beibl. 45, 31 (1894). *Gomphocarpus cultriformis* Harv. MS.
Natal, Transvaal.

8. A. SCHIZOGLOSSOIDES Schltr. *l. c.* 32 (1894).
Albany, Kaffraria, East Griqualand, Natal.

9. A. HUMILIS Schltr. *l. c.* xx. Beibl. 51, 26 (1895). *Pachycarpus humilis* E. Mey. *l. c.* 212 (1837). *Gomphocarpus humilis* Dcne. *l. c.* 561 (1844).

Wittebergen, Orange Free State, Transvaal.

10. A. BURCHELLII Schltr. in Journ. Bot. 1895, 336. *Gomphocarpus tomentosus* Burch. Trav. i. 543 (1822). *G. lanatus* E. Mey. *l. c.* 202 (1837); Dcne. *l. c.* 558 (1844).

Graff Reinet, Somerset East, Queenstown, Natal, Orange Free State, Transvaal, British Bechuanaland.

11. A. ALBENS Schltr. *Pachycarpus albens* E. Mey. *l. c.* 214 (1837). *Gomphocarpus albens* Dcne. *l. c.* 559 (1844).

Uitenhage, Albany, Kaffraria, East Griqualand, Natal.

12. A. APPENDICULATA Schltr. *Pachycarpus appendiculatus* E. Mey. *l. c.* 210 (1837). *Gomphocarpus appendiculatus* Dcne. *l. c.* 562 (1844).

Kaffraria, Pondoland, Natal.

13. A. BREVICUSPIS Schltr. *Lagarinthus brevicuspis* E. Mey. *l. c.* 214 (1837). *Gomphocarpus brevicuspis* D. Dietr. *l. c.* 900 (1840); Dcne. *l. c.* 559.

Albany, Kaffraria, East Griqualand, Pondoland, Natal, Transvaal.

14. A. CONCOLOR Schltr. *Pachycarpus concolor* E. Mey. *l. c.* 210 (1837). *Gomphocarpus concolor* Dcne. *l. c.* 563 (1844).

Albany, Kaffraria, East Griqualand, Pondoland, Natal.

15. A. DEALBATA Schltr. *Pachycarpus dealbatus* E. Mey. *l. c.* 211 (1837). *P. ligulatus* E. Mey. *l. c.* 211 (1837). *Gomphocarpus dealbatus* Dcne. *l. c.* 563 (1844). *G. alatus* Schltr. Abh. Bot. Ver. Brandbg. xxxv. (1893), 51.

Swellendam, Riversdale, George, Uitenhage, Albany, Kaffraria, East Griqualand, Pondoland, Natal, Zululand.

16. A. DREGEANA Schltr. *Pachycarpus viridiflorus* E. Mey. *l. c.* 214 (1837). *Gomphocarpus viridiflorus* Dcne. *l. c.* 561 (1844).

Uitenhage, Albany, Kaffraria, East Griqualand, Pondoland, Natal, Zululand, Orange Free State, Transvaal.

17. A. EUSTEGIOIDES Schltr. *Lagarinthus eustegioides* E. Mey. *l. c.* 206 (1837). *Gomphocarpus eustegioides* D. Dietr. *l. c.* 900 (1840); Dcne. *l. c.* 559 (1844).

Wittebergen.

18. A. EXPANSA Schltr. *Lagarinthus expansus* E. Mey. *l. c.* 206 (1837). *Gomphocarpus expansus* D. Dietr. *l. c.* 901 (1840); Dcne. *l. c.* 560 (1844).

Kaffraria, Albany, East Griqualand, Pondoland.

19. A. GIBBA Schltr. *Lagarinthus gibbus* E. Mey. *l. c.* 204. *Gomphocarpus gibbus* D. Dietr. *l. c.* 900 (1840); Dcne. *l. c.* 559 (1844).

Albany, Kaffraria, East Griqualand, Pondoland, Natal, Zululand, Orange Free State, Transvaal.

20. A. HASTATA Schltr. *Gomphocarpus hastatus* E. Mey. *l. c.* 201 (1837); Dcne. *l. c.* 560 (1844). *G. geminatus* Schltr. in Engl. Jahrb. xviii. Beibl. 45, 8 (1844).

Kaffraria.

21. A. LINEARIS Schltr. *Lagarinthus linearis* E. Mey. *l. c.* 207 (1837). *Gomphocarpus linearis* D. Dietr. *l. c.* 901 (1840); Dcne. *l. c.* 562. *G. asper* Dcne. *l. c.* 56 (1844). *G. campanulatus* Harv. Thes. Cap. i. 61, t. 97 (1859).

Kaffraria, East Griqualand, Pondoland, Natal, Zululand, Transvaal.

22. A. MULTICAULIS Schltr. *Lagarinthus multicaulis* E. Mey. *l. c.* 205 (1837). *Gomphocarpus multicaulis* D. Dietr. *l. c.* 901 (1840); Dcne. *l. c.* 559 (1844).

Kaffraria, Natal.

23. A. NAVICULARIS Schltr. *Lagarinthus navicularis* E. Mey. *l. c.* 204 (1837). *Gomphocarpus navicularis* D. Dietr. *l. c.* 900; Dcne. *l. c.* 559 (1844).

East Griqualand, Pondoland, Natal, Zululand, Transvaal.

24. A. MEYERIANA Schltr. *Lagarinthus revolutus* E. Mey. var. *β. minor* E. Mey. *l. c.* 205 (1837). *Gomphocarpus Meyerianus* Schltr. in Engl. Jahrb. xx. (1895), Beibl. 50, 33.

Wittebergen, Orange Free State, Natal.

25. A. PELTIGERA Schltr. *Lagarinthus peltigerus* E. Mey. *l. c.* 205 (1837). *Gomphocarpus peltigerus* D. Dietr. *l. c.* 901 (1840); Dcne. *l. c.* 560 (1844).

Kaffraria, East Griqualand, Pondoland, Basutoland.

26. A. PHYSOCARPA Schltr. *Gomphocarpus physocarpus* E. Mey. *l. c.* 202; Dcne. *l. c.* 558 (1844).

Üstliche Cape Colony, Kaffraria, East Griqualand, Pondoland, Natal, Zululand, Orange Free State, Basutoland, Transvaal.

27. A. PRÆMORSA Schltr. *Lagarinthus truncatus* E. Mey. *l. c.* 206 (1837). *Gomphocarpus truncatus* D. Dietr. *l. c.* 90 (1840); Dcne. *l. c.* 560 (1844).

Kaffraria, Pondoland, Natal.

28. A. REFLECTENS Schltr. *Pachycarpus reflectens* E. Mey. *l. c.* 210 (1837). *Gomphocarpus reflectens* Dcne. *l. c.* 563 (1844). ? *G. asperifolius* Meissn., Hk. Lond. Journ. Bot. ii. 443 (1843).

Albany, Kaffraria, East Griqualand, Pondoland, Natal.

29. A. RIGIDA Schltr. *Pachycarpus rigidus* E. Mey. *l. c.* 211 (1837). *Gomphocarpus rigidus* E. Mey. *l. c.* 563 (1844).

Wittebergen, Basutoland, Orange Free State.

30. A. STELLIFERA Schltr. *Lagarinthus revolutus* E. Mey. *l. c.* 205 (1837). *Gomphocarpus revolutus* Dcne. *l. c.* 561 (1844).

Uitenhage, Queenstown, East Griqualand, Natal, Transvaal.

31. A. EMINENS Schltr. *Gomphocarpus eminens* Harv. Thes. Cap. ii. 60 & 94 (1863).

East Griqualand, Pondoland, Natal, Zululand, Transvaal.

32. A. FLEXUOSA Schltr. *Gomphocarpus flexuosus* D. Dietr. *l. c.* 901 (1840); Dcne. *l. c.* 559 (1844).

Pondoland, Natal.

33. A. GERRARDII Schltr. *Gomphocarpus Gerrardi* Harv. *l. c.* 59, t. 192 (1863).

Zululand.

34. A. Mackenii Schltr. *Gomphocarpus Mackenii* Harv. *l. c.* 60, t. 193 (1863).
Zululand.

35. A. orbicularis Schltr. *Parapodium costatum* E. Mey. *l. c.* 221 (1837). *Pachycarpus orbicularis* E. Mey. *l. c.* 212 (1837). *Xysmalobium orbiculare* D. Dietr. *l. c.* 902 (1840); Dcne. *l. c.* 519 (1844). *Gomphocarpus padifolius* Bak. in Refug. Bot. t. 254 (1871). *Xysmalobium padifolium* Scott Elliot in Journ. Bot. 1890, 363. *Gomphocarpus orbicularis* Schltr. in Engl. Jahrb. xx. Beibl. 50, 34 (1895).
Kaffraria, Wittebergen, Pondoland, East Griqualand, Natal, Zululand, Orange Free State, Basutoland, Transvaal.

36. A. oxytropis Schltr. *Gomphocarpus oxytropis* Turcz. in Bull. Soc. Imp. Nat. Mosc. xxi. 259 (1848).
"South Africa."

37. A. scabra Schltr. *Gomphocarpus scaber* Harv. Thes. Cap. *l. c.* 58 & 191 (1863).
East Griqualand, Natal, Zululand, Orange Free State, Transvaal.

38. A. chloroglossa Schltr. *Lagarinthus involucratus* E. Mey. *l. c.* 203 (1837). *Gomphocarpus involucratus* D. Dietr. *l. c.* 900 (1840). *Xysmalobium involucratum* Dcne. *l. c.* 520 (1844).
Ostliche Cape Colony, Kaffraria, East Griqualand, Pondoland, Natal, Zululand, Orange Free State, Transvaal.

39. A. tenuis Schltr. *Lagarinthus tenuis* E. Mey. *l. c.* 203 (1837). *Gomphocarpus tenuis* D. Dietr. *l. c.* 900 (1840); Dcne. *l. c.* 561 (1844).
Langkloof, Uitenhage.

40. A. confusa Schltr. *Xysmalobium confusum* Scott Elliot in Journ. Bot. 1890, 363.
Natal, Zululand.

41. A. sulphurea Schltr. *Xysmalobium parviflorum* Harv. ex Scott Elliot, *l. c.* 363. *X. Gerrardi* Scott Elliot, *l. c.* 364. *Gomphocarpus parviflorus* Schltr. in Engl. Jahrb. xx. Beibl. 50, 35 (1895).
Natal, Zululand, Transvaal.

42. A. Stockenstromensis Schltr. *Xysmalobium Stockenstromensis* Scott Elliot, *l. c.* 364. *Gomphocarpus Stockenstromensis* Schltr. *l. c.* 37 (1895).
Kaffraria, Katberg, Natal, Transvaal.

43. A. sabulosa Schltr. *Gomphocarpus arenarius* Schltr. in Abh. Bot. Ver. Brand. xxxv. 52 (1893).
Ceres, Swellendam, Humansdorp, Uitenhage.

44. A. pachystephana Schltr. *G. pachystephanus* Schltr. *l. c.* 52 (1893).
Riversdale.

45. A. Flanaganii Schltr. *G. asclepiaceus* Schltr. in Engl. Jahrb. xviii. Beibl. 45, 7 (1894).
Kaffraria.

46. A. acerateoides Schltr. *G. acerateoides* Schltr. *l. c.* 16 (1894).
Transvaal.

47. A. ADSCENDENS Schltr. *G. adscendens* Schltr. *l. c.* 16 (1894).
Natal, Zululand, Transvaal.

48. A. AUREA Schltr. *G. aureus* Schltr. *l. c.* 17 (1894). *G. schizoglossoides* Schltr. *l. c.* 21 (1894).
Natal, Transvaal.

49. A. CUCULLATA Schltr. *G. cucullatus* Schltr. *l. c.* 17 (1894).
Kaffraria, East Griqualand, Pondoland, Natal, Zululand, Transvaal.

50. A. GALPINII Schltr. *G. Galpinii* Schltr. *l. c.* 18 (1894).
Transvaal.

51. A. GLAUCOPHYLLA Schltr. *G. glaucophyllus* Schltr. *l. c.* 19 (1894).
Transvaal.

52. A. SCABRIDIFOLIA Schltr. *G. ovatus* Schltr. *l. c.* 20 (1894).
Transvaal.

53. A. VALIDA Schltr. *G. validus* Schltr. *l. c.* 20 (1894).
Transvaal.

54. A. SIMPLEX Schltr. *G. simplex* Schltr. *l. c.* 21 (1894).
Transvaal.

55. A. TRANSVAALENSIS Schltr. *G. transvaalensis* Schltr. *l. c.* 22 (1894).
Transvaal.

56. A. VELUTINA Schltr. *G. velutinus* Schltr. *l. c.* 22 (1894).
Transvaal.

57. A. OCHROLEUCA Schltr. *G. ochroleucus* Schltr. *l. c.* 30 (1894).
Natal.

58. A. AFFINIS Schltr. *G. affinis* Schltr. *l. c.* xx. Beibl. 50, 27 (1895).
Transvaal.

59. A. BREVIPES Schltr. *G. brevipes* Schltr. *l. c.* 28 (1895).
Transvaal.

60. A. DEPRESSA Schltr. *G. depressus* Schltr. *l. c.* 29 (1895).
Transvaal.

61. A. FALLAX Schltr. *G. fallax* Schltr. *l. c.* 29 (1895).
Transvaal.

62. A. GEMINIFLORA Schltr. *G. geminiflorus* Schltr. *l. c.* 31 (1895).
Transvaal.

63. A. INSIGNIS Schltr. *G. insignis* Schltr. *l. c.* 32 (1895).
Transvaal.

64. A. MELIODORA Schltr. *G. meliodorus* Schltr. *l. c.* 33 (1895).
Transvaal.

65. A. PACHYGLOSSA Schltr. *G. pachyglossus* Schltr. *l. c.* 35 (1895).
Natal, Transvaal.

66. A. RIVULARIS Schltr. *G. rivularis* Schltr. *l. c.* 36 (1895).
Transvaal.

67. A. SCHINZIANA Schltr. *G. Schinzianus* Schltr. *l. c.* 37 (1895).
Transvaal.

68. A. MACRA Schltr. *G. suaveolens* Schltr. *l. c.* 38 (1895).
Transvaal.

69. A. RECTINERVIS Schltr. *G. rectinervis* Schltr. *l. c.* 38 (1895).
Transvaal.

70. A. WOODII Schltr. *G. Woodii* Schltr. in Journ. Bot. 1894, 258.
Natal, Zululand.

71. A. MACROPUS Schltr. *G. macropus* Schltr. *l. c.* 1894, 353.
East Griqualand, Natal.

72. A. CONCINNA Schltr. *G. concinnus* Schltr. *l. c.* 1895, 270.
East Griqualand, Natal.

73. A. HARVEYANA Schltr. *G. Harveyanus* Schltr. *l. c.* 1895, 270. *Xysmalobium pedunculatum* Harv. Thes. Cap. ii. 8, t. 112 (1863).
Katberg, Kaffraria.

74. A. GOMPHOCARPOIDES Schltr. *Xysmalobium gomphocarpoides* Dcne. *l. c.* 519 (1844). *Gomphocarpus longifolius* Schltr. in Engl. Jahrb. xviii. Beibl. 45, 9 (1894).

XIX. WOODIA Schltr. in Engl. Bot. Jahrb. xviii. Beibl. 45, 30 (1894).

1. W. VERRUCULOSA Schltr. *l. c.* 31 (1894).
Natal.

2. W. MARGINATA Schltr. *Pachycarpus marginatus* E. Mey. Comm. Pl. Afr. 213 (1837). *Gomphocarpus marginatus* Dcne. in DC. Prodr. viii. (1844), 560 (nec Schltr. *l. c.* xx. Beibl. 55, 33). *G. trifurcatus* Schltr. *l. c.* xviii. Beibl. 45, 9 (1894). *Woodia trifurcata* Schltr. *l. c.* xx. Beibl. 51, 39 (1895).
Kaffraria, East Griqualand, Natal, Transvaal.

XX. PENTARRHINUM E. Mey. Comm. Pl. Afr. Austr. 199 (1837); Dcne. in DC. Prodr. viii. 553 (1844); Bth. & Hk. f. Gen. Pl. 758 (1876).

1. P. INSIPIDUM E. Mey. *l. c.* 200 (1837); Dcne. *l. c.* 553 (1844).
Namaqualand, Pondoland, Griqualand, Natal, Zululand, Orange Free State, Transvaal.

2. P. CORIACEUM Schltr. in Journ. Bot. 357 (1894).
Natal.

Subtribe IV. CYNANCHINEÆ.

XXI. CYNANCHUM L. Gen. ed. 1, 63 (1737); Dcne. in DC. Prodr. viii. 547 (1844); Bth. & Hk. f. Gen. Pl. ii. 762 (1876). *Cynoctonum* E. Mey. Comm. Pl. Afr. Austr. 215 (1837); Dcne. *l. c.* 527 (1844). *Endotropis* Endl. Gen. 591 (1838); Dcne. *l. c.* 546 (1844). *Bunburia* Harv. Gen. S. Afr. Pl. ed. 1, 416 (1838).

1. C. VIRENS Steud. Nom. ed. 2, i. 462; Schltr. in Engl. Jahrb. xx. Beibl. 50, 2 (1895). *Cynoctonum virens* E. Mey. *l. c.* 216 (1837). *Endotropis Meyeri* Dcne. *l. c.* 546 (1844).
Kaffraria, Orange Free State, Transvaal, Little Namaqualand.

2. C. MEYERI Schltr. *l. c.* 2 (1895). *Sarcostemma ovatum* E. Mey. *l. c.* 216 (1837). *Cynoctonum Meyeri* Dcne. *l. c.* 531 (1844).
Little Namaqualand.

3. C. Zeyheri Schltr. *l. c.* 3 (1895).
South-east Cape Colony.

4. C. obtusifolium L. f. Suppl. 169 (1781); Thbg. Prodr. i. 16 (1800); Thbg. Fl. Cap. ii. 159 (1823); Willd. Spec. i. part 2, 1253 (1798); Roem. & Schult. Syst. vi. 101 (1820) (sub *crassifolio*); Schltr. *l. c.* 4 (1895). *Cynoctonum Dregeanum* Dcne. *l. c.* 531 (1844).
Cape Colony, Kaffraria, Pondoland, Natal.

5. C. capense L. f. Suppl. 168 (1781); Thbg. Prodr. 47 (1800); Fl. Cap. ed. 2, 159 (1823); Willd. Spec. i. part 2, 1253 (1798); R. Br. in Wern. Soc. i. 46 (1811); Roem. & Schult. Syst. vi. 102 (1820); Schltr. *l. c.* 6 (1895). *Cynoctonum capense* E. Mey. *l. c.* 216 (1837); Dcne. *l. c.* 530 (1844). *Bunburia elliptica* Harv. *l. c.* 417 (1838). *Vincetoxicum capense* Schltr. in Bol. & MacOwan, Herb. Norm. Austro-Afr. No. 1321 (1892).
Cape Colony, Kaffraria, Pondoland, Natal.

6. C. natalitium Schltr. in Engl. Jahrb. xviii. Beibl. 45, 32 (1894).
Albany, Kaffraria, Pondoland, Natal, Zululand.

7. C. africanum Hoffmannsegg, Verz. Pfl. 54 (1824); Schltr. *l. c.* xx. Beibl. 50, 5 (1895). *Periploca africana* L. Spec. Pl. 309 (1751); Willd. Spec. Pl. i. 2, 1251 (1798); Thbg. Prodr. 47 (1800); Poir. Encycl. v. 190 (1804); Thbg. Fl. Cap. (ed. 1823), 152. *Cynanchum crassifolium* R. Br. *l. c.* 46 (1809). *C. pilosum* R. Br. *l. c.* 46 (1809). *Cynoctonum crassifolium* E. Mey. *l. c.* 216 (1837); Dcne. *l. c.* 530 (1844). *C. pilosum* E. Mey. *l. c.* 216 (1837). *Vincetoxicum africanum* Bol. MS. in Herb. Norm. Austro-Afr. No. 1087.
South-west Cape Colony.

8. C. schistoglossum Schltr. in Journ. Bot. (1895), 271.
Natal, Zululand.

XXII. Flanagania Schltr. in Engl. Jahrb. xviii. Beibl. 45, 10 (1894).

1. F. orangeana Schltr. *l. c.* 10 (1894).
Orange Free State.

XXIII. Glossostephanus E. Mey. Comm. Pl. Afr. Austr. 218 (1836); Dcne. in DC. Prodr. viii. 520 (1844); Bth. & Hk. f. Gen. Pl. ii. 759 (1876). *? Oncinema* Arn. in Edin. Phil. Mag. xvii. 261 (1834); Dcne. *l. c.* 526 (1844).

1. G. linearis E. Mey. *l. c.* 218 (1836); Dcne. *l. c.* 520 (1844). *Astephanus linearis* R. Br. in Wern. Soc. i. 54 (1811); Dcne. *l. c.* 508 (1844). *Apocynum lineare* Linn. f. Suppl. 169 (1781); Thunb. Flor. Cap. 162 (1823). *? Oncinema Roxburghii* Arn. *l. c.* 261 (1834).
Caledon, Swellendam, Riversdale, George, Knysna, Humansdorp.

XXIV. Sarcostemma R. Br. in Wern. Soc. i. 50 (1811); Dcne. in DC. Prodr. viii. 538 (1844); Bth. & Hk. f. Gen. Pl. ii. 763 (1876). *Sarcocyphula* Harv. Thes. Cap. ii. 58, t. 191 (1863).

1. S. aphyllum R. Br. *l. c.* 50 (1811); E. Mey. Comm. Pl. Afr. Austr. 221 (1837); Roem. & Schult. Syst. vi. 116 (1820); Dcne.

l. c. 538 (1844). *Asclepias aphylla* Thbg. Prodr. i. 47 (1794); Fl. Cap. 153 (1823); Willd. Spec. Pl. i. 1262 (1797). *Sarcocyphula Gerrardi* Harv. *l. c.* 58, t. 191 (1863).
Uitenhage, Albany, Kaffraria.

2. S. VIMINALE R. Br. Prodr. 463 (1810); E. Mey. *l. c.* 220 (1837); Dcne. *l. c.* 538 (1844). *Cynanchum viminale* L. Syst. 257 (1774); Willd. Spec. Pl. i. 1252 (1797). *Apocynum viminale* Bass. in Act. Bon. ex Roem. & Schult. Syst. vi. 113 (1820). *Euphorbia viminalis* L. Spec. ii. 649 (1753). *Sarcostemma tetrapterum* Turcz. in Bull. Soc. Imp. Nat. Mosc. xxi. part i. 255 (1848); Walp. Ann. iii. 53 (1852).
Cape Colony, Kaffraria, East Griqualand, Pondoland, Natal, Zululand, Orange Free State, Transvaal.

XXV. DÆMIA R. Br. in Wern. Soc. i. 50 (1811); Dcne in DC. Prodr. viii. 544 (1844); Bth. & Hk. f. Gen. Pl. ii. 764 (1876).

1. D. EXTENSA R. Br. *l. c.* 50 (1811). *D. garipensis* E. Mey. Comm. Pl. Afr. Austr. 220 (1837); Dcne. *l. c.* 544 (1844). *D. barbata* Schltr. in Engl. Bot. Jahrb. xx. Beibl. 50, 43 (1895) (nec Kl.).
Little Namaqualand, Transvaal.

XXVI. RHYSSOLOBIUM E. Mey. Comm. Pl. Afr. Austr. 217 (1837); Dcne. in DC. Prodr. viii. 626 (1844); Bth. & Hk. f. Gen. Pl. ii. 769 (1876).

1. R. DUMOSUM E. Mey. *l. c.* 217 (1837); Dcne. *l. c.* 626 (1844).
Little Namaqualand.

(To be continued.)

CAPE ALGÆ.

By ETHEL S. BARTON.

(Continued from p. 198.)

PROTOPHYCEÆ.

MERISMOPEDIA MEDITERRANEA Näg. Plettenberg, *Weber van Bosse!*

CHLOROPHYCEÆ.

ASCOTHAMNION sp. Durban, *Weber van Bosse!*

VALONIA sp. Durban, *Weber van Bosse!* This plant approaches *V. utricularis* Ag., but without a careful revision of the genus it is difficult to mark the limit of each species. I give these two last records without specific names, as it seems to me wise to put on record that these genera are represented in this region.

MICRODICTYON CALODICTYON Dec. Durban, Natal, *Weber van Bosse!*

Bryopsis setacea Her. On comparison of the type plants of *B. setacea* Hering and *B. myosuroides* Kütz., they prove to be one and the same species, and must therefore be united under the older name of Hering.

B. FLANAGANI Bart. British Kaffraria, *Flanagan*!

B. CUPRESSINA Lam. Cape Point, *Boodle*! Plettenberg Bay, *Weber van Bosse*!

CODIUM MAMILLOSUM Harv. Illovo, *Weber van Bosse*!

FLORIDEÆ.

BANGIA CILIARIS Carm. Sea Point, *Weber van Bosse*!

DASYPHILA CRYPTOCARPA Schm. (= *Ptilota cryptocarpa* Holmes). Kowie, *Becker*! Cape Morgan, *Flanagan*! After examination of this plant, I am compelled to agree with Prof. Schmitz as to its position in the genus *Dasyphila*. The cystocarps entirely agree with those of *D. Preissii*.

Haloplegma africanum Kütz. Algoa Bay, *Herb. Binder*! sub nomine *Zonariæ roseæ*. Kowie, *Becker*! Natal, *Ruperti*! Major Reinbold kindly allowed me to see the original plant on which Kützing founded his species. In outward form it resembles *H. Duperryi* Mont., but even with a lens the difference in the growth of the peripheral filaments is distinct. In *H. africanum* they have the appearance of being combed out in patterns, owing to their regular size and position on the thallus. *H. Duperryi* has none of this appearance, and looks more or less flat and spongy.

THAMNOCLONIUM PROLIFERUM Sond. Cape, *Herb. Lübeck*!

Major Reinbold most kindly sent me from the Hamburg Herbarium the original specimen of *Chondrus scutellatus* Hering, collected by Krauss at Port Natal. The fruiting specimen = *Gigartina fastigiata* J. Ag., and the sterile plant is clearly different, having the whole interior filled with roundish, thick-walled cells. It is too young to be named with accuracy. Prof. J. G. Agardh, in *Spec. Gen. et Ord.* iii. pt. i. 148, mentions *Chondrus scutellatus* Kütz. *Tab. Phyc.* xvii. tab. 56, as a synonym for *Polyopes constrictus* J. Ag. Kützing, however, at this place and in *Spec. Alg.* 736, though referring the plant to Hering, mentions it as being collected by Pappe. The Kützing plant is clearly a different plant from the real *Chondrus scutellatus* of Hering.

Prionitis nodifera Bart. = *Gigartina nodifera* Hering. Natal, *Krauss*! *Evans*! *Weber van Bosse*! Major Reinbold has most kindly allowed me to see Hering's original specimen of *G. nodifera*, and I find it is a species of *Prionitis*. The same species has also been sent to the British Museum by Mr. Evans, of Natal, and Mrs. Weber van Bosse has interesting forms of it found by herself at the same locality. The fruiting portion is knotted and twisted at the top, and is shorter than the sterile fronds, which are long and sword-shaped.

Gigartina insignis Schmitz MS. = *Iridæainsignis* Endl. & Dies. Kowie, *Becker*!

The specimen recorded in my former list as "*G. Teedii* Lam. Port Alfred, *Slavin*!" appears to be a hybrid between *G. Teedii* and *G. pistillata* J. Ag. Such a plant is described by Prof. Agardh in *Spec. Alg.* ii. 264, as *G. pistillata* var. *pectinata*. Through the kindness of Prof. Falkenberg, I have been allowed to see a plant sent to Prof. Schmitz by Dr. Becker from the Kowie. It is the tetrasporic form of the Port Alfred plant. Prof. Schmitz had queried it as a variety of *G. pistillata*. This form has not yet been recorded south of the equator, and on geographical grounds some phycologists might prefer to regard this as a new species or variety; but I do not see sufficient reason to do this.

Phyllophora diversifolia Suhr. Major Reinbold kindly sent me a plant under this name from Herb. Lehmann, marked "secundum Herb. Drege." It is a fragment of *Chætangium ornatum* J. Ag., and as the description by Suhr of *P. diversifolia* in *Flora*, 1840, 262, answers to this plant, I suspect that *Phyllophora diversifolia* Suhr is a synonym for *Chætangium ornatum* J. Ag.

SPYRIDIA GLOMERULIFERA Bracebridge Wilson MS. = THAMNOCARPUS ? GLOMULIFERUS J. Ag. Cape Morgan, *Flanagan*!

MYRIOPHYLLA BECKERIANA Holmes. Kowie, *Becker*!

Desmia Lyngb. Prof. Schmitz (Syst. Uebers. d. bisher bek. Gatt. d. Flor., *Flora*, 1889, 454, and *Engl. Bot. Jahrb.* Bd. xxi. 1895, 168) drops the name of *Desmia* and adopts *Chondrococcus*, and gives in the latter reference as his reason that *Desmia* Lyngb. was a genus of brown algæ which included by chance one species of *Florideæ*, viz. *D. Hornemanni* Lyngb. The genus *Desmia* was insufficiently described by Lyngbye, when he founded it in 1819, in his *Tentamen Hydroph. Dan.* 33; and Prof. J. G. Agardh, in his *Spec. Alg.* ii. pt. 2, 639, emends the characters of the genus, but calls it *Desmia* J. Ag. MS. This was published in 1852, but in 1847 Kützing had described his genus *Chondrococcus* (*Bot. Zeit.* 1847, 23), which included *Sphærococcus Lambertii* of Suhr (= *D. Hornemanni*). Prof. Schmitz therefore gives priority to Kützing's name as opposed to *Desmia* of J. G. Agardh.

Chondrococcus Hornemanni Schmitz (= *Desmia Hornemanni* Lyngb., *Sphærococcus Lambertii* Suhr, *Chondrococcus Lambertii* Kütz., non *Fucus Lambertii* Turn.). Grunow (Voyage of Novara, *Bot. Theil.* i. 84) doubts whether this species is identical with *Sphærococcus Lambertii* Kütz., and later Schmitz (in *Engl. Bot. Jahrb.* Bd. xxi. 1895, 171) considers them to be distinctly different species. I have examined the plants collected by Drege and Ecklon at the Cape under the name of *S. Lambertii* and *S. Lambertii* var. *gelatinosa* Suhr, which Major Reinbold has been so kind as to lend me. These plants are described in *Flora*, 1835, 728. Grunow, who has not seen Suhr's variety, queries it as identical with *Desmia Hornemanni*; I have not seen an authentic specimen of the latter, but Suhr's variety agrees entirely with Lyngbye's figure and description, so far as it goes, of *D. Hornemanni*. Prof. J. G. Agardh, however, has seen authentic specimens of both *D. Hornemanni* and *S. Lambertii*, and finds them identical (*Spec. Alg.* ii. 642). In the British Museum there are forms of this plant ranging from the very narrow thallus corresponding with Lyngbye's plate of *D. Hornemanni* through all grades up to a large form of *S. Lambertii*. A careful examination of these plants leads to the inevitable conclusion that no form is worthy even of being ranked as a variety, for no one could tell where the typical plant ends and the variety begins. Additional records are: Port Elizabeth, *Farquhar*! British Kaffraria, *Flanagan*!

The record of *Phacelocarpus tristichum* J. Ag. must be omitted. The plant referred to is *P. tortuosus* Endl. & Dies.

Erythroclonium corallinum Holmes = *Lomentaria corallina* Kütz. Cape Morgan, *Flanagan*!

Ectoclinium Kowiense Holmes. Kowie, *Becker*!

Vanvoorstia spectabilis Harv. Isipingo, *Weber van Bosse*!

Polysiphonia Pappeana Kütz. Through the kindness of Major Reinbold, I have seen a specimen of Pappe's plant no. 13, described in Kützing's *Spec. Alg.* 813, collected at Table Bay. It is identical with *P. atro-rubescens* Grev.

Kuetzingia natalensis J. Ag. Natal, *Evans*!

(To be continued.)

THE SALIX LISTS IN THE 'LONDON CATALOGUE.'

By E. F. Linton, M.A.

The existence of two lists of Salices in the ninth edition of the *London Catalogue* may be best explained by quoting Mr. Hanbury's statement in his introductory remarks (March, 1895):—"Owing to the lamented death of Dr. White in December last, he never saw his list in print. All possibility of discussing several important points having passed, I deemed it best to insert Dr. White's list in its entirety, and to ask the Rev. E. F. Linton to supply an alternative list to be printed at the end of the *Catalogue*." The result is two lists, which differ from one another in the order of species and in some few details, but are alike in their abolition of many "species" and most of the varieties which were familiar to the eye in previous editions.

This paper is written for the purpose of discussing the differences between the two lists, as fairly as may be under the circumstances, from one point of view. No one regrets more than myself that we cannot now *audire alteram partem* from one who so thoroughly entered into N. J. Andersson's views of the specific order of the Willows, and made such good use of his opportunities of studying the British species of this genus, as the late Dr. Buchanan White.

We have been familiarized for many years in this country with the specific order of Andersson, Sir J. D. Hooker having adopted it in the *Student's Flora* with two or three variations, *viz.* the subordination of *S. cinerea* to *S. Caprea* as a subspecies, and the insertion of *S. Sadleri* Syme as a numbered species after *S. Myrsinites*, followed by *S. Arbuscula*, which Andersson places after *S. phylicifolia*. Dr. White also took Andersson's order of species in the main, but transposed *S. aurita* and *S. cinerea*, and degraded *S. nigricans* as a variety of *S. phylicifolia*; thus making one species less for Britain than either Andersson or Sir J. D. Hooker. This latter step has produced a confusing result, since under *S. phylicifolia* Linn. stand lettered as three varieties—

a. phylicifolia Linn. auct.
b. phylicifolia—nigricans Wimm.
c. nigricans Sm.

The second of these names is used, not in Wimmer's sense, but "as a convenient designation for the numerous forms which cannot be referred to either of the extremes"; while under each of the vars. a. and c. are ranged a number of hybrids, an innovation which has a clumsy appearance and is out of keeping not only with the rest of the list, but with the whole *Catalogue*. It may readily be admitted that the numerous forms of *S. nigricans* and *S. phylicifolia* run into one another, and on this ground, in any other genus almost, this would be a strong argument for combining the two species in one. But in a genus in which hybridization not unfrequently occurs, and definite lines of demarcation are obliterated by recrossings of the species with one of its hybrid offspring, the many intermediates between type *S. nigricans* and type *S. phylicifolia* are easily accounted for. There is a similar case in the regular series of gradations that occur between *S. alba* L. and *S. fragilis* L. As Dr. White has observed, in describing *S. viridis* Fr., "the hybrid, as met with, more frequently shows a departure" from typical *viridis* "towards either *fragilis* or *alba*, till finally it is almost impossible to separate it from one or other of these species" (*Journ. Linn. Soc.* xxvii. pp. 372, 373). There are two alternative views to choose between, either of which would account for the present state of things: one is to regard *S. alba* and *S. fragilis* as old-established species which by hybridization and innumerable crossings and recrossings between the types and the hybrids have given us in the present day every variation; or to regard these two as one original species, which has gradually diverged in two directions, and presents to us now two extreme forms, each of them very common, well-marked, and usually constant in character, accompanied by some variations mostly lying between these two forms, but as a rule much scarcer than either of them. Even if this latter theory should be the more acceptable alternative, the time would surely have come when the two extreme forms, in this case *S. alba* and *S. fragilis*, would deserve recognition as distinct types and the specific rank which has always been accorded them. In the same way, on either theory, it is more convenient, if not more true, to regard *S. nigricans* and *S. phylicifolia* as specific types.

In Dr. White's list, that is, in Andersson's specific order, *S. viminalis* L. has place between *S. Arbuscula* L. and *S. lanata* L., and the *S. purpurea* group brings up the rear. Searching for a reason why the lowland *S. viminalis* should be inserted between these two alpine species, I perceived that, though it has little in common with *S. lanata* beyond the long style, and with *S. Arbuscula* besides the short pedicel and long narrow nectary, *S. viminalis* is so closely allied to *S. Lapponum* L. in every detail of the catkin, and also in the foliage, that the latter may be regarded as the alpine correlative of the former, and the two must go together. It afterwards came under my notice that Wimmer had remarked the similarity, saying (*Sal. Eur.* p. 35) the two were so like in their inflorescence that they could not be separated, adding that in the fertile soil of West Bothnia *S. Lapponum* formed osier-like shoots. If *S. Lapponum* had stood next to *S. viminalis* in the list, changing places with *S. lanata*, there would have been little objection to this arrangement; but since *S. viminalis* has so many hybrids with the Capreæ, which are mostly conveniently arranged under this species (see Explanations of the *London Catalogue*, ed. 9), this group fits in best in a linear arrangement just before the Capreæ, as in former editions of the *London Catalogue;* the "*Smithiana*" hybrids forming a succession of connecting links, which is hardly broken by the insertion of *S. Lapponum;* for, as Wimmer observes (*l.c.*), this species undoubtedly shows the transition from *S. viminalis* to the *cinerea* group.

S. purpurea and its hybrids are placed by Andersson at the end of the list, in pursuance of his division of the Salices into the three tribes, *Pleiandræ*, *Diandræ*, and *Synandræ*. The union of the two filaments, in whole or in part, is the main character of the *Synandræ*, which include two groups, *Incanæ* and *Purpureæ*. The objection to the arrangement by which these two groups terminate the list is that a sudden jump is made from a series of dwarf alpine willows to some lowland species that have no apparent connection with them. This objection is easily removed. The *Synandræ* only differ from the *Diandræ* by the connation of the filaments. Place the *Synandræ* at the beginning instead of the end of the *Diandræ;* let the *Incanæ* (not represented in Britain) follow and not precede the *Purpureæ*, and they form a natural passage from the *Purpureæ* to the Viminales, which *S. incana* Schrank greatly resembles in foliage. The *S. purpurea* hybrids also fall into a natural position, and lead on to the Viminales and Capreæ, to a union with which they most of them owe their existence. Then the very distinct willow, *S. reticulata* L., which Kerner at one time thought worthy of generic distinction, forms (with its immediate allies from Lapland and N. America) a fitting termination to the list.

Andersson's classification is open also to some other objections (see Dr. White's criticisms for instance, *Journ. Linn. Soc.* xxvii. 337), which, however, are in great part due to the inherent difficulties of the genus; but it is on the whole the best arrangement published, subject to some such changes as I have suggested above and carried out in my list.

My further remarks will follow the order of the list embodied in the *Catalogue*, for the convenience of quoting the *Catalogue* numbers.

1395 *triandra* Linn. All three hybrids need a query as to their parentage. *S. subdola* F. B. W. is assigned to *triandra* × *alba* with much hesitation in the *Revision*, and it is frankly admitted that the only bush known may be a form of *S. viridis* Fr. The name *subdola*, too, can hardly stand for *S. alba* × *triandra;* Wimmer declares *S. undulata* Ehrh. to be a hybrid of *S. triandra* and *S. alba*, though he had fully considered and rejected the *triandra* × *viminalis* theory (*Sal. Eur.* 145); and the only objection to Wimmer's theory is the presence of a moderate style in *undulata;* in *S. lutescens* Kern., however, a style which is of frequent occurrence is considered no difficulty, though *S. aurita* and *S. cinerea* commonly have none. In *S. undulata* Ehrh. the serration of the leaf is strong evidence against the presence of *S. viminalis*, and the concolorous scales and glabrous ovaries show no sign of its presence. I have succeeded in crossing *S. triandra* and *S. viminalis*, and, though this must not be considered a crucial test, the result is so far satisfactory, that *S. hippophaifolia* Thuill. is the product and not *S. undulata* Ehrh. This conclusion affects the third hybrid in the list, viz. "*triandra* × *viminalis* (*undulata* Ehrh.)" as well as the first; for *S. hippophaifolia* Thuill. must stand as the true and ascertained synonym for *S. triandra* × *viminalis*.

With regard to the question whether *S. decipiens* Hoffm. is *S. fragilis* × *triandra*, there are two or three facts which militate against this theory; otherwise, in most respects, it affords a satisfactory explanation. The flowers, both male and female, of *S. decipiens* are few and scattered, as Hoffmann said in his description; while both *fragilis* and *triandra* are free-flowering. The buds are not far removed from those of *S. triandra* in shape, but show none of the influence of *S. fragilis*, and in winter are easily distinguished from both. Dr. White (*Journ. Linn. Soc.* xxvii. p. 349) expressed incredulity about Leefe's statement, "buds black in spring," remarking, "but his specimens have pale buds." Herbarium specimens usually have pale buds, as the winter-buds do not begin to blacken till about October; it is the catkin-buds that become black, and the black exterior scales, which are more or less polished, have usually fallen off or lost colour by the time flowering specimens are gathered in spring. I have seen this peculiarity of bud in *S. pentandra* L., but in no other British willow besides the one under consideration. The polish of the bark of the twigs is in excess of either supposed parent; and in female specimens of *S. fragilis* var. *porcellanea* Baenitz, which Dr. White has rightly identified with *S. decipiens* Hoffm., the pedicels of the ovaries are not intermediate in length, but shorter than in *S. fragilis* or *S. triandra*. Unless these objections can be disposed of, *S. decipiens* must be placed as a variety, or better as a subspecies, under *S. fragilis* for the present. There are other named forms of the hybrid, as *S. alopecuroides* Tausch, *S. subtriandra*, and *S. Kovatsii*, known on the Continent; but for Britain I know of no examples (apart from *S. decipiens*); for after cultivating my St. Neot's, Hunts, plant (*Journ. Linn. Soc.* xxvii. 353) for years, there is no doubt that it is *S. triandra*, and that Dr. White and myself were misled by the abnormal summer-flowering catkins.

The varieties of *S. triandra* have always been a source of harassment to British botanists, and their diminution or disappearance, if justified, affords a welcome relief. Of the four varieties admitted in the previous edition of the *Catalogue*, *S. amygdalina* L. and *S. contorta* Crowe seem to be at most indistinct leaf-variations; *S. Trevirani* Spr. both Wimmer and Andersson agree in explaining as *S. triandra* × *viminalis*. But *S. Hoffmanniana* Sm., though degraded by Wimmer and Andersson, and retained as a mere synonym of *S. triandra* L., and treated in the same way by Dr. White, who regarded it as the equivalent of Andersson's *β. concolor* 1. *latifolia* (though it does not agree with Andersson's description), demands fairer consideration. The features which Borrer, who drew Smith's attention to the form, observed are the smaller growth of the shrub (12–15 ft. high), the shorter leaves ($1\frac{1}{2}$–$2\frac{1}{2}$ in.), which are ovate to ovate-lanceolate from a rounded base, "their sides being nowhere parallel," paler beneath, but hardly glaucous. To this description has been added, "young twigs not furrowed"; "stipules larger and more rounded" (Syme, *E. B.* viii. 215), both good points. Having had the opportunity of watching *S. Hoffmanniana* Sm. growing side by side with *S. triandra* type, I am able to confirm all these features, and may say that, whereas *S. triandra* is a rather lax tree, ascending on the banks of the R. Stour, Dorset, to 25–30 ft., with dark green foliage, *S. Hoffmanniana* Sm. on the same river-bank is a small shrubby tree forming a dense head, 10–12 ft. high, with more numerous slenderer twigs, often flattened above the leaf-axils but not grooved, and with foliage of a yellower green colour and a thinner texture. The question, to my mind, is not whether it is a *variety* of *S. triandra*, but whether with all these points of difference it does not deserve the specific rank Smith accorded it. Contrast, for instance, the very slight distinctions between *S. fragilis* L. and var. *britannica* F. B. White. I have failed to find in the field the numerous intermediates that Syme refers to; though it is sometimes difficult to decide on incomplete herbarium specimens. But if, as Dr. E. de Crespigny stated, *S. Hoffmanniana* is the only ♂ *triandra* form by the Thames, it is likely that crosses would occur between this and *S. triandra* ♀, and intermediates might in this way be produced. It is curious that the subspecies (as I am disposed to rank *S. Hoffmanniana* Sm.) should almost invariably be male. It has doubtless been propagated by cuttings, being frequently of use in strengthening quickset hedges and preserving river-banks.

1396 *pentandra* × *alba* (*hexandra* Ehrh.). In my list the figure 3 placed after this hybrid was intended to include the two counties, Edinburgh and Forfar, mentioned in the *Revision*, and a sample from Thornhill, Dumfriesshire, which Mr. J. Fingland informed me Dr. White had named *S. hexandra* much on the *alba* side; and he kindly supplied me with a plant. This plant has developed into a handsome form of *S. alba*, with no apparent trace of *S. pentandra* in it. The comital numbers should therefore be 2 ? rather than 3.

1396 *pentandra* × *fragilis* (*cuspidata* Schultz). This has been discovered at Wybunbury Bog (No. 51, Set of British Willows), Cheshire, by Capt. A. Wolley Dod; also by the Rev. A. Ley at Pontrilas, in Herefordshire; the comital number is therefore 3 instead of 1, as in my list.

1397 *fragilis* Linn. The exact distribution of the type and variety still wants working out. Dr. White knew of three counties only for the type at the date of the *Revision*; to these may be added Derbyshire (see No. 2, Set of British Willows).

1399 *cinerea* L. Smith's two varieties *aquatica* and *oleifolia* are no more than leaf-forms connected with the type by intermediates; the names may be of use both for the garden and the herbarium, as an aid to classification of the forms of a very variable willow, but they do not represent distinct varieties; and on this ground were omitted by Dr. White. It has been suggested that these two represent hybrids of *aurita;* it is not the case, however, that all "*aquatica*" is *aurita* and *Caprea*, nor that all *oleifolia* Sm. is *aurita* × *cinerea*, as has been suggested. After deducting what may rightly go to these hybrids, there still remains a residuum in each case of pure *cinerea* forms.

1401 *Caprea* × *cinerea*. I am still unable to give a satisfactory account of the distribution of this hybrid. It is apparently exceedingly scarce, and hard to detect even in localities where both species occur together. A plant cultivated at Kew as *S. moschata* would seem to be it; but the plant formerly cultivated there as *S. sphacelata* was in my opinion *S. aurita* × *Caprea* rather than this hybrid. A Derbyshire form of it is issued as No. 55, Set of British Willows.

1402 *repens*. The varieties of *S. repens* admitted in former editions of the *Catalogue* can only be regarded as forms of little constancy (see introductory remarks to the third fascicle of British Willows); and do not cover half the forms which this species produces in Britain. The only familiar form which is a good variety is *S. rosmarinifolia* L., and that is perhaps rather a subspecies; while the proof of its occurrence in Britain is not forthcoming.

1402 *repens* × *Caprea* (*Caprea-repens* Lasch.). Published by Dr. White for Britain (*Journ. Linn. Soc.* xxvii. 394) on our Armadale specimens, but I have never agreed to this naming; and now after years of cultivation (at Shirley), and after seeing Scandinavian specimens of *Caprea* × *repens* and *cinerea* × *repens*, I am sure that my view is correct, that the plant is *S. cinerea* × *repens*. This latter hybrid comes also from the Clova Valley, but not from Holme Fen, as Dr. White thought on specimens of the Rev. W. R. Linton's or mine in Mr. A. Bennett's herbarium. I have also a leaf-specimen, probably of this, received from Dr. Mason, origin unknown. We have, however, no *S. Caprea* × *repens* for Britain as yet.

1403 *phylicifolia* × *aurita* (*S. ludificans* F. B. White). The account of the Perthshire bushes on which *S. ludificans* was founded leaves room for grave suspicion whether any of them were *S. aurita* × *phylicifolia*. I have come across several such bushes, with foliage much on the *phylicifolia* side, and *aurita* suggested by the pubescence and shape of the leaf, and it may be an abbreviated style. Cultivation, however, in two such cases disposed of the pubescence, and has shown the plant to be *S. phylicifolia*. The most promising Perthshire plant died. The most satisfactory Forfarshire plant is issued as No. 59, Set of British Willows. There is in all probability some strain of *aurita* in this last; but Dumfriesshire plants, of which Mr. James Fingland has kindly furnished me with cuttings and specimens, which are admirably intermediate, show how much wanting in evidence of *aurita* the Perthshire *ludificans* is. All such supposed *aurita* × *phylicifolia* ought to be tested in cultivation by careful observation at different stages of growth. The winter condition, *e. g.*, affords an excellent opportunity for judging supposed hybrids with the *Capreæ* by the appearance of the flowering buds.

1403 *phylicifolia* × *Caprea*. As in the case of the last, there is much *S. phylicifolia* growing by river-sides, and especially in straths, which suggests a cross with *Caprea*, by the woolly hair of the young foliage; a symptom which usually disappears in cultivation. After examining many specimens of *S. laurina* Sm. and some living plants, I am unable to agree with Andersson and others that Smith's plant is *S. Caprea* × *phylicifolia*. The plant that has been cultivated at Kew as *S. laurina* Sm., Leefe's ii. 38 of the earlier set ("*S. laurina* Sm. received from Borrer as the plant of Smith"), and Leefe's *Salict. Exs.* Fasc. i. 3 ("*S. laurina* Sm."), all seem to be the same hybrid, and to have no evidence of *S. Caprea* which would not equally bear witness to *S. cinerea;* and in the foliage to have leaves which bear much resemblance to *cinerea* leaves and none to *Caprea*. Mr. Charles Bailey has in his herbarium three sheets of "*S. laurina*" which seem to be really *S. Caprea* × *phylicifolia*, viz. (1) Wirtg. *Herb. Pl. Sel. Fl. Rhen.* vi. 260; (2) Rchb. *Fl. Germ.* 1020, W. Hofmeister); and (3) Wimmer 90 (ex hort. Berol.); but none of these is British, and they do not represent Smith's plant as handed down to us by Borrer, Leefe, and the Kew Gardens. With these three exceptions, all the *laurina* Sm. I have noted belongs to *S. cinerea* × *phylicifolia*, and *S. laurina* Sm. is the synonym of this hybrid; while *S. Caprea* × *phylicifolia* is uncertain as a British plant.

1403 *phylicifolia* × *cinerea* × *Caprea* (*tephrocarpa* F. B. White). Of this I have seen no specimens.

1403 *phylicifolia* × *Lapponum* (*Lapponum phylicifolia* Linton). It is a pity that this hybrid is inserted here, inverting the order of the two parent species for no reason whatever (*Journ. Bot.* 1891, 214).

1403 *phylicifolia* × *Myrsinites* (*Normanni* Ands.). This has been entered in my list for one vice-county, *viz.* Mid-Perth, on the strength of specimens from a bush discovered by the Rev. E. S. Marshall, and so named by him and Dr. F. B. White. It may be so; but the evidence of *S. Myrsinites* is not very clear, compared with intermediate plants (accidental garden products) I have in the garden of this hybrid, which exhibit both parents about equally well. Unfortunately this bush has not been cultivated.

1403 *phylicifolia* × *repens* (*Schraderiana* Willd.). Entered in both lists, but I have seen no specimens which are fairly entitled to be so named; in two cases cultivation (in the garden at Bournemouth) proved years ago that suspected plants have no *repens* in them at all.

1403 b. and c. See remarks on these in the early part of this paper (p. 462).

1403 *phylicifolia* c. *nigricans* × *Arbuscula* (*Kraettliana* Brügg). It is perhaps by an oversight, due to Dr. White not having seen his list in type, that *S. Arbuscula* × *nigricans* is placed here, and the corresponding hybrid *S. Arbuscula* × *phylicifolia* under *S. Arbuscula*.

Obviously it is most convenient that both should stand together *S. Arbuscula.*

1403 *phylicifolia* c. *nigricans* × *Myrsinites* (*Wahlenbergii* Ands.). It has before been pointed out that *S. Wahlenbergii* is the latest of four or more names for this hybrid. If *S. punctata* Wahl. is unsatisfactory through some confusion of original specimens, which is the objection advanced, then *S. Myrsinites-nigricans* Wimmer should be adopted (1866). Andersson used *S. myrsinitoides* Fr. in DC. *Prodr.* xvi. (2), 290, in 1868, and replaced this by *S. Wahlenbergii* in Blytt's *Norges Flora* a few years later (1874).

1403 *phylicifolia* c. *nigricans* × *repens* (*nigricans-repens* Heidenreich). Dr. White's description of specimens from Mid-Perth looks as if the right plant had been found; but I have seen no satisfactory British specimens, and have entirely failed in my attempts to produce artificially both this hybrid and also *S. phylicifolia* × *repens.*

1404 *Arbuscula* × *Myrsinites* (*serta* F. B. White). Of this also I have seen no specimens, suspected plants having turned out otherwise in the garden. These two species do not cross readily.

1404 *Arbuscula* × *phylicifolia* (*Dicksoniana* Sm.). Dr. F. B. White considered that Leefe's published specimens (*Sal. Exs.* i. 12) "received from Mr. Borrer as from Smith" were rightly referred by Leefe to *S. Dicksoniana* Forbes, t. 55, fig. 1. But he mentions Forbes having doubts whether his plant was the same as Smith's, and quotes Leefe as saying that the plant described by Smith "must be regarded as at present unknown." The description of Smith's plant (Sm. *Eng. Fl.* iv. 196) does not fit Leefe's cultivated plant in important particulars. In Smith's plant the ovary is "on a longish smooth stalk, elevated somewhat above the scales"; the catkins are *ovate*, "in which the present *Salix* differs from all we have hitherto described, and agrees with a few other dwarf species, particularly the *rosmarinifolia* and *Arbuscula*" (*S. Arbuscula* Sm. = *S. repens* L.). And again, under *S.* "*Arbuscula*" (i. e. *S. repens* L.), he says of its catkins that "by their short ovate figure they assist materially in characterizing the species, agreeing most with those of *S. Dicksoniana*, from which the leaves of the present [species] widely differ in form and silkiness." It is evident that the *S. Dicksoniana* of botanic gardens and of Leefe's *Sal. Exs.* Fasc. i., with its cylindric catkins and shortly-pedicelled ovaries, cannot be the same as the plant Smith describes, and which he carefully notes differs from the foregoing species (some *Arbuscula* and *phylicifolia* forms) by their *ovate* catkins. Judging from Smith's description, one may say that plant may very possibly have been *S. phylicifolia* × *repens*, but cannot have been *S. Arbuscula* × *phylicifolia.* If the botanic garden *Dicksoniana*, which Leefe published in his set, be this hybrid, then its synonym should be *S. Dicksoniana* Leefe, or possibly *S. Dicksoniana* Forbes, but not *S. Dicksoniana* Sm. I have not yet got this plant for cultivation.

1405 *viminalis* × *Capreæ* (*S. Smithiana* Willd.), with five varieties of this compound hybrid, a. *stipularis* Sm., b. *sericans* Tausch., c. *velutina* Schrad., d. *ferruginea* G. Ands., e. *acuminata* Sm. The unsatisfactoriness of Andersson's arrangement, or of this modification of it, is best shown by the quotation of a paragraph on this group from the *Revision* (p. 415) :—" Before proceeding to notice each of these varieties, I may say that, as the result of the study of a very large series of specimens (many of them authentically named), both British and Continental, I have failed to find such a permanence of characters as will serve to definitely separate one from another. Certain examples can be, without much hesitation, placed satisfactorily under one or other of the varietal names. There are many, however, that cannot really be referred to one variety more than to another, and which, combining to some extent the characteristics of each, form connecting links. Of some others little more can be said than that they are modifications of *S. Smithiana*."

With this confession of the failure of the arrangement to give satisfactory results, why should so keen an interpreter of willow hybrids have departed from his usual order, and inserted an aggregate hybrid with five varieties? How is this any better than the old arrangement of *S. ambigua* Ehrh., for instance, with four varieties—an arrangement of former *Catalogues* now wisely dropped? Surely an attempt to differentiate the hybrids of *S. viminalis* and the *Capreæ* is not so hopeless as to justify the retention of this relic of a bygone classification.* At the same time *S. stipularis* Sm. and *S. acuminata* Sm. must stand in our list as unsolved hybrids of the *viminalis* group, together with the three which are more easily recognised and understood, *aurita* × *viminalis*, *Caprea* × *viminalis*, and *cinerea* × *viminalis;* for the present this arrangement, which is practically Wimmer's, can hardly be improved.

1406 *lanata* × *herbacea* (*Stephania* F. B. White). The Rev. E. S. Marshall's observations on the origin of *S. Sadleri* Boswell-Syme (*Journ. Bot.* 1894, 212), taken in conjunction with the accurate description of the same willow by Dr. White in the *Revision* (p. 422), have led me to the conclusion that *S. Sadleri* and *S. Stephania* are names for different forms of the same hybrid, the former nearer *S. lanata* in general appearance, and the latter nearer *S. herbacea*. I have yet another form in the garden from Glen Fiagh, Forfar, which is more exactly intermediate, and helps to connect these two described forms.

1407 *Lapponum* L. b. *helvetica* Vill. Forfar and Mid-Perth are the two counties from which specimens of this variety are supposed to have come, but it will be seen on reference to the *Revision* (p. 428) that the evidence for their being of British origin does not amount to certainty. Hence the ? after the comital number in the alternative list.

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* In a parallel case, *viz.* the hybridization of *S. purpurea* with *Capreæ*, Dr. White criticizes Andersson for retaining the name *Pontederana*, which "he makes" to "include the hybrids formed not only with *S. cinerea*, but with *S. Caprea*, *S. grandifolia*, and *S. aurita*, since he thinks that there is no sure method of separating them. As, however, he has not united these species, it is scarcely justifiable to unite the hybrids if it is at all possible to distinguish them; and he himself has kept them separate as varieties" (*Journ. Linn. Soc.* xxvii. 450). Dr. White, in retaining the name *S. Smithiana* for the aggregate *viminalis* × *Capreæ*, has done exactly what he regarded as "scarcely justifiable" in the case of Andersson with the name *Pontederana*.

1407 *Lapponum* × *cinerea* (*cinerea-limosa* Læstad.). It is unfortunate that the hybrid name for this willow survives which retains the defunct name of one of the parent species (*limosa* for *Lapponum*). *S. cinerea-Lapponum* Wimm. is far preferable to the older *cinerea-limosa* on this ground. I have not seen any British specimen of *S. cinerea* × *Lapponum.*

1407 *Lapponum* × *nigricans.* If the insertion of this hybrid be founded on a gathering by the Rev. E. S. Marshall in Canlochan Glen, Forfarshire, I entirely dissent from the interpretation put upon the specimens.*

1408 *Myrsinites* × *herbacea* (*Sommerfeltii* Ands.). In the *Annals of Scottish Natural History* for 1894 I have shown that *S. Grahami* Baker is intermediate between these two species, that all its characters can be well accounted for as derived from their union, and that in fact there is no doubt that *S. Grahami* Baker is *S. herbacea* × *Myrsinites.* This name, given by Borrer years before in MSS., was published in *Journ. Bot.* 1867, p. 157, t. 66, and consequently antedates *S. Sommerfeltii* Ands. published in 1868 (DC. *Prodr.* xvi. (2), 291).

For convenience I take here into consideration two hybrids placed by Dr. White under 1409 *herbacea* L. *S. Grahami* was regarded by Boswell-Syme as a probable hybrid between *S. herbacea* on the one hand, and *S. phylicifolia* or *S. nigricans* on the other. Dr. White narrowed this supposition down to *S. Grahami* being *S. herbacea* × *phylicifolia;* while he expressed his belief that the Irish plant so like *Grahami*, viz. the *S. Moorei* of previous *London Catalogues*, was *S. herbacea* × *nigricans.* Having disposed of *S. Grahami*, not only by the arguments contained in my paper, but by the artificial production of *S. herbacea* × *phylicifolia*, a result which strongly corroborated my view, I was anxious to study *S. Moorei* in the garden, in order to judge of the merits of the *herbacea-nigricans* theory for myself. By the kindness of Mr. F. W. Moore I was shown, in the summer of 1895, at Glasnevin, both specimens and living plants of *S. Moorei;* and later on furnished with a strong rooted piece to grow. The sight of the Dublin specimens and plants first raised doubt in my mind as to the presence of *nigricans* in the hybrid. *S. nigricans* in composition gives a dulness of colouring to twigs and foliage, and a considerable amount of persistent pubescence; also overcomes any tendency to red colouring of the inflorescence; and there is usually some discoloration in the dried foliage specimens. In *S. Moorei* there is no discoloration of the herbarium specimens; the young leaves are silky, but older leaves have become glabrous; there is a bright look about the plant, and the catkins have some reddish colouring. The inference is that *S. Moorei* is *S. herbacea* × *phylicifolia*, and not *S. herbacea* × *nigricans.* If this is the case, it might be supposed that *S. Moorei* would correspond exactly with the plant artificially raised of *S. herbacea* × *phylicifolia*, and referred to previously. Hybrids, however, raised from the same two species do not all turn out exactly alike, not even in the same sowing. In a crop of *S. repens* × *viminalis* seedlings, there are eight or ten plants, the foliage of most of which show some differences by which the plants can be distinguished. Still more have such differences appeared in a small crop of *S. aurita* × *Lapponum*, which was raised from crossing a male and female plant of the same hybrid. This fertilisation was made to test whether a hybrid could reproduce itself with any constancy; and the result in this case showed a good deal of variation as the result. It is not surprising, then, that *S. Moorei* and the *S. herbacea* × *phylicifolia* artificially produced do not agree exactly. The former is a hybrid on the *herbacea* side, retaining a dwarf creeping habit; the latter is on the *phylicifolia* side, having a strong tendency to ascend and become a small bush. There is a similar discrepancy between the foliage of the two; but the catkins (female) have much in common, and there is no essential feature forbidding a common descent.

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* Since this was written, the Rev. E. S. Marshall has informed me that he believes the insertion of this hybrid in the British list to have been based on his specimens. It must, I fear, be withdrawn.

The result of the investigation is that *S. Moorei* = *herbacea* × *phylicifolia*, and replaces *S. Grahami* in Dr. White's list; while *S. Grahami* in turn replaces *S. Sommerfeltii* Ands. (under *S. Myrsinites*) = *S. herbacea* × *Myrsinites;* and *S. herbacea* × *nigricans* disappears, and has yet to be discovered as a natural hybrid. From the "Addendum" list *S. herbacea* × *nigricans?* must also be erased, and replaced by *S. herbacea* × *phylicifolia* (*S. Moorei*).

1409 *herbacea* × *aurita* (*Margarita* F. B. White). The Rev. E. S. Marshall has found this hybrid in E. Perth (89), a very different-looking form from the Mid-Perth (88) plant; consequently the comital distribution is 2 instead of 1. There is a specimen which I take to be the same hybrid in the Borrer Herbarium, at Kew, labelled "A *Myrsinites?* . . . Caithness? 1808"; but since the county is queried, it is open to question whether this can be reckoned as an additional county.

1410 *reticulata* L. There are four hybrids given in Dr. White's list under this species; two of them are entered in the Addendum List, out of regard for Dr. White's opinion; but, in accordance with the alphabetical arrangement there adopted for hybrids, they appear one under *S. Lapponum* and the other under *S. nigricans*. I have not seen specimens of either; a plant supposed to be *S. Lapponum* × *reticulata*, from Glen Fiagh, has grown in the garden (No. 50) for years, but not flowered, and the evidence of *S. reticulata* in it has not become more apparent. It is therefore not reckoned. The remaining two supposed *reticulata* hybrids are omitted. They were described from imperfect specimens, one (*sejuncta*) from scrappy leaf-specimens only, the other (*soluta*) from female specimens not in good condition, with a good deal of uncertainty as to either parent; and I rather approve of the intention expressed at the close of their description:—"This apparently very distinct plant I provisionally name *S. soluta*, but I am unwilling to place either it or the other (viz. *S. sejuncta*) in the list till they have been rediscovered" (*Journ. Linn. Soc.* xxvii. 444).

1411 *purpurea* L. On this group there is little to add to what has been said above, since the differences between the two lists lie only in the position to be assigned to *S. purpurea* in the specific order, and in the retention of three forms of the species and two of the hybrid with *viminalis* in the Addendum List. The triple hybrid, *S. sesquitertia* F. B. White, appears in cultivation to justify the origin assigned to it; as also does *S. secerneta* (*purpurea* × *phylicifolia*). The question, however, is liable to be raised again with regard to the latter, whether *S. Croweana* Sm. is not the earlier name; since connation of filaments was a distinguishing feature of this variety of *S. phylicifolia*, and connation of filaments is one of the main evidences of the presence of *S. purpurea* in composition.* There is, however, some confusion in the specimens to which the name *S. Croweana* has been given, and some suspicion of "monstrosity" in some of the specimens that clearly have connate filaments (*Journ. Linn. Soc.* xxvii. 398, 399), and on these grounds Dr. White thought it desirable to impose a fresh name.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

William A. Clarke, F.L.S.

(Continued from p. 365.)

Arrhenatherum avenaceum Beauv. Agrost. 55 (1812). **1597.** "In the fields next to S. James Wall as ye go to Chelsey."—Ger. 22.

Fibichia umbellata Koel. Gram. Gall. & Germ. 309 (1802). *Cynodon Dactylon* Pers. (1805). **1688.** "Found by Mr. Newton . . . between Pensans and Marketjew in Cornwall."—Ray Fascic. Stirp. Brit.

Sieglingia decumbens Bernh. Erf. 44 (1800). *Triodia* Br. (1810). **1670.** "Gramen avenaceum minus procumbens paniculis non aristatis."—Ray Cat. 141. "Harefield Common" (Middx.).—Blackst. Fasc. 34 (1737).

Phragmites communis Trin. Fund. Agrost. 134 (1820). **1551.** "Groweth muche in England."—Turn. i. 64 (25).

Sesleria cærulea Arduin. Animadv. Bot. Spec. alt. 18 (1763). **1670.** "Gramen spicatum montanum asperum e rupium fissuris in monte Ingleborough exit."—Ray Cat. 155. "Ab amico optimo D. Fitz Roberts accepi, qui alicubi in Cumberlandia collegit."—Ray Syn. ii. 325 (1696).

Cynosurus cristatus L. Sp. Pl. 72 (1753). **1632.** "Gramen cristatum, Bauh."—Johns. Kent, 15. "In most medowes about Mid-summer."—Ger. em. 29^{a} (1633).

Koeleria cristata Pers. Syn. i. 97 (1805). **1688.** "Observatur nobisque communicata D. Dale in montosis et campestribus sed rarius."—Ray Hist. ii. 1265. "On Banstead Downs, M. Doody." —Ray Fasc. 11 (1688).

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* See *Journ. Linn. Soc.* xxvii. 451, where Dr. White remarks:—"As belonging to *Salix sordida* I put all plants which, however like *cinerea* they may be, have the filaments of the stamens more or less united to each other . . . . one of the best characters of hybridization with *S. purpurea* is the presence of connate stamens."

Molinia varia Schrank, Baier Fl. (1789). **1666.** "Gr. pratense spica Lavendulæ. Below the Park on the farther side of Micham Common" [Surrey].—Merrett, 57.

Catabrosa aquatica Beauv. Agr. 97 (1812). **1655.** "Gramen dulce udorum. . . . Udis Londinensis agri juxta Thamesis amœnissima fluenta . . . gaudet."—Lob. Ill. 10.

Melica nutans L. Sp. Pl. ed. 2, 98 (1762). **1696.** "This was sent by Mr. Pettiver out of the North, and by him communicated to us."—Ray Syn. ii. 262. "à D. FitzRoberts circa Kendalium Westmorlandiæ oppidum primarium collectum et ad me transmissum est."—Id. 325.

M. uniflora Retz, Obs. i. 10 (1779). **1632.** "Gramen avenaceum rariore grano nemorense Lob."—Johns. Kent. p. 36.

Dactylis glomerata L. Sp. Pl. 71 (1753). **1640.** "Calamagrostis torosa panicula . . . by the hedge sides in many Countries of the Kingdome."—Park. 1182, 5.

Briza media L. Sp. Pl. 70 (1753). **1570.** "Phalaris pratensis minor . . . herbidis pratensibusque . . . Angliæ oritur."—Lob. Adv. 16.

B. minor L. Sp. Pl. 70 (1753). **1778.** "Prope Bath—D. Alchorne."—Huds. ed. ii. 38.

Poa annua L. Sp. Pl. 68 (1753). **1597.** "Very plentifully among the hop-gardens in Essex," &c.—Ger. 2.

P. bulbosa L. Sp. Pl. 70 (1753). **1762.** "Prope Clapham in Com. Surriensi."—Huds. ed. i. 34. "Dom. Stone nuper prope Yarmouth spontaneam invenit."—Sm. Fl. Brit. pref. p. 7 (1800).

P. alpina L. Sp. Pl. 67 (1753). **1777.** "On the sides of Craig-challeach, above Finlarig, in Breadalbane, Mr. Stuart."—Lightf. Fl. Scot. i. 96.

P. laxa Haenke in Jirasek, Beob. Riesengeb. 118 (1791). **1800.** "On Ben Nevis, Mr. Mackay."—Sm. Fl. Brit. 101 ("*P. flexuosa*").

P. glauca With. Bot. Arr. ed. 3, ii. 148 (1796). **1778.** "*P. pratensis β alpina.* In montibus Westmorlandicis, Cumberlandicis, &c."—Huds. ed. 2, 39. "Crib y Ddeseil [Snowdon], Mr. Griffith." —With. *l. c.*

P. Balfourii Parnell in Ann. N. H. x. 122 (1842). **1842.** "Gathered by Dr. Balfour on Ben Voirlich, near the head of Loch Lomond."—Parnell, *l. c.* 121.

P. nemoralis L. Sp. Pl. 69 (1753). **1762.** "In sylvis et umbrosis."—Huds. i. 35. "Seems to have been first noticed in England by Mr. Hudson or by myself, who sent it to him in the year 1759."—Mr. Pulteney.

P. compressa L. Sp. Pl. 69 (1753). **1724.** "On the walls about Eltham. . . . Mr. J. Sherard."—Ray Syn. iii. 409.

P. pratensis L. Sp. Pl. 67 (1753). **1597.** "Gr. pratense minus."—Ger. 2.

P. trivialis L. Sp. Pl. 67 (1753). **1597.** "Gr. pratense."—Ger. 2. This and the last-named (*P. pratensis*) were first well distinguished by Hudson and Curtis.

Glyceria fluitans R. Br. Prod. 179 (1810). **1597.** "Flote Grasse . . . growes everywhere in waters."—Ger. 13.

G. plicata Fries, Mant. iii. 176 (1842). **1845.** Distinguished from last species by Messrs. T. Moore and C. C. Babington in Ann. N. H. xvi. 232.—E. B. 1520 ("*Poa fluitans*") represents this species.

G. aquatica Wahlb. Fl. Gothob. 18 (1820). **1597.** "In fennie and watery places."—Ger. 6.

G. maritima Wahlb. Fl. Gothob. 17 (1820). **1688.** "Gramen paniculatum maritimum vulgatissimum. In palustribus maritimis ubique frequentissimum est."—Ray Hist. 1286.

G. distans Wahlenb. Fl. Upsal. 36 (1820). **1778.** "Prope Exmouth, circa Northfleet," &c.—Huds. ed. ii. 34 (*Poa aquatica* var.).

G. Borreri Bab. in E. B. Suppl. 2797 (1837). **1837.** "Gathered by Mr. Borrer at Gosport" (Hants), and elsewhere.—E. B. Suppl. *l. c.*

Festuca procumbens Kunth, Rev. Gram. i. 129, ex En. i. 393 (1833). c. **1794.** Gathered by Curtis in 1793 at the foot of St. Vincent's Rock, Bristol. — Curtis, Fl. Lond. vi. 11. ("*Poa procumbens.*")

F. rigida Kunth, Rev. Gram. i. 129, ex En. i. 393 (1833). **1597.** "Gramen minus duriusculum. In moist fresh marrishes." Ger. 4; and Johns. Merc. Bot. p. 39 (1634).

F. rottbœllioides Kunth, Rev. Gram. i. 129, ex En. i. 395 (1833). *Sclerochloa loliacea* Woods. **1688.** "This was shewn me by Mr. Newton who found it at Bare about a mile from Lancaster, as also nigh the Saltpans about a mile from Whithaven Cumberland, at Bright-Helmston in Sussex, & alibi in maritimis." —Ray Fascic. 11.

F. uniglumis Soland. ap. Ait. Hort. Kew. i. 108 (1789). **1716.** "Festuca sterilis humilima spica unam partem spectante. . . . Found by Mr. Dale in Mersey-Isle near Colchester." — Petiver, Conc. Gram. no. 101.

F. ambigua Le Gall, Fl. Morbihan, 731 (1852). **1856.** "On the Dover, Ryde, 1839" ("*F. uniglumis β.*").—Bromfield, Fl. Vectensis, 606. See Journ. Linn. Soc. v. 189.

F. myurus L. Sp. Pl. 74 (1753). **1633.** "Found by Mr. Goodyer upon the wals of the antient city of Winchester."—Ger. em. 30.

F. sciuroides Roth, Tent. ii. 130 (1787). **1670.** "Gramen paniculatum bromoides minus paniculis aristatis unam partem spectantibus. In marginibus herbosis, et ad sepes."—Ray Cat. 154.

F. ovina L. Sp. Pl. 73 (1753). **1688.** "Gramen capillaceum locustellis pinnatis non aristatis. . . . Observavit et ad me attulit D. Dale." — Ray Hist. ii. 1288. "Invenimus etiam inter plantas nostras siccas olim collectas."—Ray Syn. ii. 260.

F. rubra L. Sp. Pl. 74 (1753). **1762.** "Habitat in pascuis siccis."—Huds. ed. i. 36. ". . . in comitatu Westmorlandico."—Huds. ed. ii. 45.

F. fallax Thuill. Fl. Par. ed. 2, 50 (1799). *F. duriuscula*, Linn. **1670.** "Gramen pratense panicula sparsa versus unam partem, duriore."—Ray Cat. 153.

F. sylvatica Vill. Dauph. ii. 105 (1786). **1800.** "In a moist wooded valley at the foot of Ben Lawers, 1793, Mr. Mackay."—Sm. Fl. Brit. i. 121. ("*F. calamaria.*")

F. pratensis Huds. Fl. Angl. ed. i. 37 (1762). **1670.** "Gramen paniculatum elatius, paniculis seu spicis muticis squamosis. . . . In pratis."—Ray Cat. 153.

F. arundinacea Schreb. Spic. Fl. Lips. 57 (1771), (*F. elatior*, Auct. Angl.). **1688.** "a D. Sam. Doody . . . ad ripas Thamesis fluvii inter Londinum et Chelseiam observatum ad nos siccum transmissum est."—Ray Hist. ii. 1909.

Bromus giganteus L. Sp. Pl. 77 (1753). **1688.** "Fulhamiæ prope Londinum, in aggere inter locum excensionis è cymbis & Episcopale palatium a D. Doody observatum ostensum & ad nos transmissum est."—Ray Hist. ii. 1909.

B. ramosus Huds. i. 40 (1762), *B. asper* Murr. (1772). **1634.** "Gramen avenaceum lanuginosum glumis rarioribus longis. Hairy Haver-grasse."—Johns. Merc. Bot. 40.

B. erectus Huds. i. 39 (1762). **1690.** "Festuca Avenacea sterilis spicis erectis. In the hedges beyond Botley near Oxford" (Bobart).—Ray Syn. i. 237.

B. madritensis L. Sp. Pl. ed. 2, 114 (1762). **1778.** "In muris antiquis; circa Londinum et Oxonium."—Huds. ed. ii. 50. "Near Battersea Church" (*B. diandrus*).—Curtis, Fl. Lond. vi. t. 5 (1794).

B. sterilis L. Sp. Pl. 77 (1753). **1597.** "Bromos sterilis."—Ger. 69.

B. mollis L. Sp. Pl. ed. 2, 112 (1762). **1641.** "Gramen Bromoides vernum spicis erectis. Early meadow Drauk, or Darnell-grasse."—Johns. Merc. Bot. pars alt. 22.

Brachypodium sylvaticum Roem. et Schult. Syst. ii. 741 (1817). **1629.** "Gram. spicæ Brizæ maius Bauh."—Johns. Eric.

B. pinnatum Beauv. Agr. 101 (1812).—**1696.** "In copses and hedges common enough about Oxford, D. Bobart."—Ray Syn. ii. 248.

Lolium perenne L. Sp. Pl. 83 (1753). **1548.** "Phenix Dioscoridis . . . called in Cābrigshire Way bent."—Turn. Names D v. back. Compare Turn. Herb. ii. 17.

L. temulentum L. Sp. Pl. 83 (1753). **1548.** "Lolium . . . Darnell groweth amonge the corne and the corne goeth out of kynde into Darnel."—Turn. Names, E ii.

Triticum caninum L. Sp. Pl. 86 (1753). **1690.** "Gramen caninum aristatum radice non repente sylvaticum. Found plentifully growing in Stoken-Church Woods" (Bobart).—Ray Syn. i. 235.

T. repens L. Sp. Pl. 86 (1753). **1597.** "In gardens and arable grounds as an infirmitie and plague."—Ger. 22.

T. pungens Pers. Syn. i. 109 (1805). **1860.** "Sea-shores, common."—Babington in Fl. Cambs. p. 310.

T. acutum DC. Bot. Gall. 529 (1828). **1856.** "Sandy sea-shores, probably not rare."—Bab. Man. ed. 4, 412 (*T. laxum*); *cf.* Bab. Fl. Cambs. p. 310.

T. junceum L. Sp. Pl. ed. 2, 128 (1762). **1633.** "In the salt marishes by Dartford in Kent."—Johnson, Ger. em. 24.

Lepturus filiformis Trin. Fund. Agr. 123 (1820). **1632.** "Gramen parvum marinum spica loliacea."—Johns. Kent. p. 11 (near Margate). See Ger. em. ch. 22, par. 8.

Nardus stricta L. Sp. Pl. 53 (1753). **1632.** "Gramen spartium capillaceo folio minimum."—Johns. Enum. See Ger. em. ch. 22, par. 10.

Hordeum sylvaticum Huds. ii. 57 (1778). **1666.** "Gr. Secalinum maximum. . . , In the woods a mile west from Petersfield" (Hants).—Merrett, 57.

H. secalinum Schreb. Spic. Fl. Lips. 148 (1771), *H. pratense* Huds. (1778). **1633.** "Commonly . . . in our medowes."—Ger. em. ch. 22, par. 4.

H. murinum L. Sp. Pl. 85 (1753). **1548.** "The wal Barley whiche groweth on mud walles."—Turn. Names, D v. back.

H. maritimum With. Bot. Arr. ed. 2, 127 (1787). **1688.** "Gramen secalinum palustre et maritimum. In palustribus frequentissimum est."—Ray Hist. ii. 1258.

Elymus arenarius L. Sp. Pl. 83 (1753). **1597.** "About Norfolke and Suffolke in great plentie."—Ger. 39.

(To be continued.)

SHORT NOTES.

Hypochœris glabra L. — In the short sandy turf about St. Martha's Hill, near Guildford, there grows a form of *Hypochœris glabra* L. which differs markedly in habit, size, and fruit, from any previously recorded in British Floras. There is, however, in the Herbarium at the British Museum a similar plant from between Thetford and Brandon, in Suffolk. The Surrey plant is small, quite glabrous, root fusiform, branched upwards, bearing several rosettes of small oblanceolate leaves, and a large number of ascending slender simple (or occasionally branched) leafless stems 2–3 in. long. Heads small, cylindrical, 3–4-flowered. Corolla and pappus slightly exceeding the involucre. Fruits all truncate, bearing a sessile pappus in two rows, destitute of woolly hairs. The vegetation of the neighbourhood abounds in depauperate forms, and this would appear at first sight to be one, were it not for the fact that the tendency of this species is to become more simple and lose its outer truncate achenes in very poor soil. Jordan even claims to have restored its aborted truncate marginal achenes to *H. Balbisii* Maur. by cultivation. As this can hardly, therefore, be passed over as a depauperate form, nor yet a mere local variation, occurring as it does in Surrey and Suffolk, and as it has not yet been described, so far as I can discover, in any Continental or British Flora, I venture to call it *Hypochœris glabra* L. var. *nana*. In a classification of the other varieties of the species it would appear as below. The names under each division are not in all cases synonymous.

1. Achenes all truncate. (*a*) Pappus woolly below. *H. arachnoidea* DC.; *H. contexta α. homœosperma* Wallr. (*b*) Pappus not woolly. *H. glabra* L. var. *nana*.

2. Outer achenes alone truncate. (*a*) Pappus of truncate achenes woolly below. *H. arachnoides* Poir.; *H. adscendens* Brot.; *H. intertexta* Peterm.; *H. minima* Desf.; *H. ascendens* Walp. [*H. hispida* Roth (non Brot.), in which only a few central achenes are rostrate, connects this with 1*a*.] (*b*) Pappus not woolly below. *H. glabra* L. (as restricted by Poiret, Wallroth, and Petermann); *H. dimorpha* Brot. (non Sang. nec Ten. nec Salz.).

3. Achenes all rostrate. *H. Balbisii* Maur.; *H. Loiseleuriana* Godr.

The common English form has webbed pappi, and comes under 2*a*.—S. T. Dunn.

Lepidium Smithii Hook.—The typical form of *Lepidium Smithii* Hook., as described by Smith (*Eng. Fl.*), has "Pouches . . . entirely destitute of the minute concave scales so characteristic of *Lepidium campestre* Br." The species is common in Devonshire, but in all the specimens examined the pouches are more or less rough with papillæ, usually smaller, but often not less numerous than those of *L. campestre*. A complete series could be made from quite smooth-pouched plants to the other extreme, but it is a remarkable fact that, though the latter is more frequent in Britain and the Continent (to judge from the material in the British Museum Herbarium), and is the prevalent if not the only form in some districts, the former is made the type by Smith. It is convenient to have names for extreme forms, especially when permanent over large areas, and I propose to call the rough-pouched form *L. Smithii* Hook. var. *papillosum*.—S. T. Dunn.

Warwickshire Plants.—The following are not included in Bagnall's Flora:—*Galium Vaillantii* DC. Plentiful in allotments, Long Lawford.—*Galeopsis Tetrahit* L. var. *bifida* (Boenn.) Heaths by the "Straight Mile," Dunchurch.—*Euphorbia exigua* L. var. *retusa* DC. Not infrequent as an extreme form with the type.—*E. Lathyris* L. as a weed at Grandborough and Kenilworth.—*Camelina sativa* Crantz, *Trifolium agrarium* L., and *Crepis taraxacifolia* Thuill., only recorded from single waste-ground localities, appear in fallows about Rugby.—*Alchemilla vulgaris* L. var. *filicaulis* (Buser), noted for this county by Linton (*Journ. Bot.* 1895), occurs well marked in meadows near Francton Wood.—*Polygala oxyptera* Reichb. Heath near Dunchurch; extends northern range in the county.—S. T. Dunn.

Geranium molle.—The form of *Geranium molle* L. with petals twice the length of the sepals certainly occurs in England, and is not uncommon on the greensand in Surrey. This is *G. villosum* Ten., reduced to a var. of *G. molle* in Willkomm & Lange, *Prod. Fl. Hisp.* and Gren. & Godr. *Fl. Fr.* = *G. molle β. grandiflorum* Vis. *Fl. Dalm.*—S. T. Dunn.

Peplis Portula.—This plant occurs on the Continent in two forms, the commoner one having internal calyx-teeth longer than the external, while a local variety (*Peplis Portula* L. var. *longidentata* Gay) has the outer teeth longest. The latter appears to be the only form occurring in Britain.—S. T. Dunn.

Carduus vivariensis Jord.—A peculiar looking thistle was sent in to the Wild Flower Competition at the Bath Flower Show in August, labelled "*Carduus acanthoides*." It looked very different from that plant by reason of its very long leafless peduncles. The fruit was fully developed. A similar plant is described by Jordan in his *Pugillus* under the above name. It grows plentifully among the dry hills in the province of Ardèche, S. France, and differs from *C. acanthoides* in inner phyllaries shorter than flowers on pappus; heads on long, almost naked peduncles; whole plant glabrous, except pedicels. This description and the figure agree well with our thistle, which grows near Mangotsfield Station, in Gloucestershire. Mr. Smith, of Kingswood, kindly showed me the locality. There were one or two plants only, and close by were a few aliens, so that it may have been introduced with them. It would, however, be interesting to know whether the same plant does not occur elsewhere in Britain among our *C. acanthoides* forms.—S. T. Dunn.

Carlina vulgaris L.—A peculiar habit is assumed by this plant on the sandy dunes at Bude, N. Cornwall, each plant forming a ball or cone of closely packed heads separated from the ground by a rosette of leaves.—S. T. Dunn.

Somerset Aliens.—At Tiverton, near Bath, great quantities of cinders, &c., have from year to year been deposited on waste ground along the river-bank. A dense growth of *Chenopodium*, *Atriplex*, &c., covers the whole ground. In the beginning of September Mr. H. Griffith and I worked over it, and found, among the usual weeds, *Melilotus parviflora* Desf., *Epilobium tetragonum* L., *Solanum nigrum* L., *Linaria minor* Desf., *Chenopodium ficifolium* Sm., *Panicum Crus-galli*, *Poa compressa* L., all plentiful; several patches of *Chenopodium ambrosioides* L., *Panicum sanguinale* L., *P. miliaceum* L.; a few plants of two natives of our S.W. coasts, *Corrigiola littoralis* L. and *Cynodon Dactylon* Pers. (*fide* Ar. Bennett); and one large plant of *Medicago scutellata* All. and *Tribulus terrestris* L. (*Zygophylleæ*), Mediterranean weeds.—S. T. Dunn.

Erythræa capitata Willd. in Northumberland.—On July 4th I found this species locally plentiful upon a grassy down of the coast (subsoil sandstone), about 1½ mile S. of Newbiggin; *E. Centaurium* occurred with it, but was very scarce. Mr. F. Townsend, on being asked whether he would place it under the type or his var. *sphærocephala*, wrote:—"The *Erythræa* is undoubtedly *E. capitata*. I do not think now that a varietal name is required." This new station greatly extends its known British range. Among some brambles collected nearer Newbiggin, Mr. Moyle Rogers has identified *R. infestus* Weihe, *R. pulcherrimus* Neuman, and *R. Selmeri* Lindeberg; the first-named, which seemed to be scarce, is an addition to the list for v.-c. 67. A hybrid rose, from a furze-clad bank above the Wansbeck, near its mouth, is probably *R. mollis* × *pimpinellifolia*, being associated with them; but it only fruited sparingly, and may perhaps be a cross with *R. tomentosa*, though I did not see that near.—Edward S. Marshall.

Mimulus Langsdorffii Donn in Berkshire.—The plant recorded as *M. luteus* by Rev. W. M. Rogers in this Journal for 1887, p. 342, from Hampstead Norris, in Berkshire, where it was, he says, "a well-established alien," belongs to the above species; as does the plant from Bognor Marsh, where it exists in very large quantity, and also the plant which I gathered with *Impatiens biflora* by the Emborne Stream in 1891. In this locality it occurs in both Berkshire and Hampshire. Probably the *Mimulus luteus* of most of our British localities belongs to *M. Langsdorffii*, the North American plant. Prof. E. L. Greene, of the Catholic University, Washington, whose interesting paper on *M. Langsdorffii* in this Journal for 1895, pp. 4–8, suggested to me the examination of our British forms, has confirmed the above name.—G. C. Druce.

Nanomitrium tenerum Lindb.—On September 6th last I noticed a considerable quantity of this little moss on Ashdown Forest, near Crowborough, Sussex, where it was growing on the mud of a large shallow pond, which had been left bare by the drought. It was growing in rather dense tufts, and, as described by Philibert (*Revue Bryologique*, 1878, p. 26), it frequently affected the cracks in the mud. *N. tenerum* (*Ephemerum tenerum* of Schimper's *Synopsis*) does not appear to have been recorded from Britain since its original discovery by Mr. Mitten in 1854. Its existence must be somewhat precarious, as on revisiting the locality a week later I found it almost entirely submerged, and there was considerable difficulty in procuring specimens. The absence of the protonema, at least when the plant is mature, gives it an appearance when growing very unlike that of any species of *Ephemerum;* indeed, the protonema is only to be seen on looking for it very closely in the neighbourhood of quite immature plants. Its identity has been confirmed by Mr. H. N. Dixon and by M. Husnot, who kindly sent me French specimens for comparison. —W. E. Nicholson.

Bartsia Odontites var. littoralis Reichb. in Britain.—Last July I sent Mr. Arthur Bennett fresh specimens of a *Bartsia* which he named as above. It is the *Odontites littoralis* Fries. It grows in some quantity, mostly on a shingly shore, on that part of the west coast of Argyllshire included in v.-c. 97. It is at once noticeable by its distinct habit, the stem being simple or with a few *straight* branches. From a list of twelve European references which Mr. Bennett kindly supplied me I find that it is given as a species in seven cases, a subspecies in two, and a variety in three. Nyman, in *Consp. Fl. Eur.* and in the *Supp.*, makes it a subspecies of *Odontites verna* (P.) Reichb. It is found on the coasts of Denmark, Sweden, Norway, S.W. Finland, N. Germany, Holland, and in the saline districts of E. Germany, but has not been previously recorded for this country.—Symers M. Macvicar.

West Perth Plants.—While we were staying at Callander last summer, my son, F. A. Rogers, brought me a fresh specimen of *Lycopodium inundatum* that we had gathered on Ben Ledi, a species not recorded for W. Perth in *Top. Bot.* Other "new records" for the vice-county that he saw are *Polygala oxyptera*, *Hieracium auratum* Fr. (*teste* E. F. Linton), *Lactuca muralis*, *Arctium minus* (the segregate), and *Betula verrucosa*,—all in the Callander neighbourhood; with *Polygonum maculatum* by the Lake of Monteith. In this my first visit to Scotland, I found myself favourably circumstanced for studying the Scottish Rubi throughout July, and in a future number of this Journal I hope to be able to give some account of the forms I saw.—W. Moyle Rogers.

New Monmouthshire Brambles.—This summer I have found in open parts of Chepstow Park Wood *Rubus Leyanus* Rogers, not previously recorded for v.-c. 35. Another bramble from the same locality, which I sent to Mr. Rogers for a name, is "*R. Lintoni* Focke, a very interesting new county record." I also gathered this spring a form of *Erophila præcox* DC. in v.-c. 34; it was growing in abundance on a turfy wall-top near Tidenham Chase.—W. A. Shoolbred.

NOTICES OF BOOKS.

Synopsis der Mitteleuropäischen Flora. Von Paul Ascherson, Dr.M. & Ph. Leipzig: Engelmann. 1896. (Band i. Lieferungen 1 and 2.)

Professor Paul Ascherson, of Berlin, the learned author of the classical *Flora der Provinz Brandenburg*, and of a vast number of botanical papers dealing with very varied subjects, has, as his friends knew, for many years been occupied in collecting, sifting, and working out the materials for a flora of Central Europe. The first-fruits of these continuous and almost life-long efforts have just appeared in the shape of the two first parts of the *Synopsis der Mitteleuropäischen Flora*.

The *Synopsis* is to consist of three volumes, each of twelve parts (or sixty sheets), and six parts or three double parts are to be issued every year. The completion of the work may therefore be expected about the year 1902. It comprises the floras of the German Empire, Austro-Hungary including Bosnia and the Herzegovina, Switzerland, Holland, Belgium, Luxemburg, Poland, the French and the Italian Alps, and Montenegro, thus considerably exceeding the area of Koch's *Synopsis Floræ Germanicæ et Helveticæ*, which has hitherto been the one standard book for the floras of Germany, Switzerland, and those provinces of Austria which as long as 1866 formed part of the German Confederation. It is intended to be a critical compendium of our present knowledge of the floras of the area indicated, brought up in every respect to the level of the best and most recent research. The author has the advantage of knowing intimately a considerable portion of the area from field work, and of personal relations with all the more prominent botanists of the Continent.

The *Synopsis* is confined to the Pteridophyta and Phanerogamæ, the Thallophyta and Bryophyta of the area having recently been dealt with in the new edition of Rabenhorst's *Kryptogamenflora*. The two parts issued comprise Filicariæ, Equisetariæ, and Lycopodiariæ as far as *Selaginella selaginoides*, and suffice to give an idea of the plan and style of the work. The general arrangement of the classes and orders is essentially that of Engler and Prantl's *Natürliche Pflanzenfamilien;* the treatment of the genera and of the species is more original. A new departure—new at least for a synopsis or flora on so large a scale—has been made by the distinction of *collective species* (Gesammtarten), *species* κατ' ἐξοχὴν (Arten), and *subspecies* (Unterarten). Further degrees of subdivision adopted in the work are *races* (Rassen, proles), or forms, the differential characters of which coincide with a distinct geographical distribution, *varieties* (Abarten), and *subvarieties* (Unterabarten). The latter are enumerated concurrently with *sports* (Spielarten, lusus), or individual aberrations. It is evident that a system of classification which carries subdivision so far, particularly in its lower grades, requires an intimate knowledge of the material to be classified. With this we may unhesitatingly credit the author, who is generally admitted to be the first living authority on European floras. It involves, however, a risk of encumbering the text, and obscuring the more general and truly important features of the arrangement. Indeed, it can hardly be said that the author has wholly escaped this danger: the clearness of the classification and of the text generally has decidedly suffered. Moreover, this drawback has been enhanced in the case of genera, numbering more than a few species, by the interpolation of a dichotomous clavis in the descriptive text, sometimes carrying the variety of the letterpress to a degree which is almost bewildering. Besides, the subdivisions of the species are, with the exception of the subspecies, not designated as races, varieties, or subvarieties, as one might expect from the explanation on the wrappers. They are simply enumerated under I, II, A, B, a, b, c, &c., and it is left to the student to attribute to a given form, described for instance under I (which figure is, by the way, not printed, because it is considered to be sufficiently indicated by the following II), or under II b, the rank of a race, or a variety, or a subvariety.

As an example, we may quote *Cystopteris fragilis*, which is divided into two subspecies, *A*, *C. eu-fragilis* and *B*, *C. regia*. Of *C. eu-fragilis* two principal forms are distinguished, with respect to the indumentum; the first, which is supposed to be form I., is *C. eu-fragilis* κατ' ἐξοχὴν, and has therefore no special name; the second is II. *Huteri*. *C. eu-fragilis* κατ' ἐξοχὴν is further broken up into two minor forms according to the degree of the division of the fronds, viz., A. *dentata* and B. *pinnatipartita*. B. *pinnatipartita* is again subdivided in a. *anthriscifolia*, b. *cynapiifolia*, c. *angustata*, d. *acutidentata*. Then we find a form C. *deltoidea*, separated from the remainder of I. on another principle, *viz.* on account of the length of the lowest pair of pinnæ. But this is not all, for we find at the end of the subspecies *C. eu-fragilis* a form **b.** *Baenitzii*, distinguished from the rest (which represents **a.**) by the different sculpture of the spores.

The author says he has followed Otto Kuntze's method of dealing with forms which are distinguished according to different, non-correlative characters, and they are treated *seriatim*, each series corresponding to a different principle of division, a method which appears to us highly artificial, and tending to an undue multiplication of varieties and subvarieties. A good deal of the complication thus introduced into the letterpress might have been obviated by a clavis of species preceding the descriptive text. This might have been drawn up on a merely practical basis with a view to naming, while the sequence of the descriptions of the species would indicate their phylogenetic relations. If it was, however, desirable to combine a synopsis of the phylogenetic relations with the clavis, then the distinction at least of collective species and species *κατ' ἐξοχὴν* might have been easily expressed in the clavis itself.

Another drawback of a technical kind to the work is the frequent use of abbreviations which are all but unintelligible, at least for those who use the work mainly for reference. No doubt we shall get a table of explanations in a later part, but for the present we must content ourselves with three lines on page 3 of the wrappers. In many cases the student will have to accept the method of abbreviating followed in the *Synopsis* as well as he can, by making himself familiar with its peculiarities. On page 41 we find, for instance, among the synonyma of *Aspidium Braunii* quoted, "*A. ac.* ε. *B.* Koch, Syn. ed. 2, 977 (1845)." This is meant for "*Aspidium aculeatum* ε. *Braunii*, Koch, &c." To find that out we have to go back to page 37, where we find the name *Aspidium aculeatum* the first time printed in full. Or, to quote another example of inconvenient abbreviations, we find on page 41, "Christ, a. a. O." To get at the "a. O.," or *locus citatus*, we have to turn back, and after having come across the same reference not less than twelve times, we find it at last on page 37, in the very succinct form "Christ, Schw. BG.," which means "Christ, in Ber. Schweiz. Bot. Ges." This extreme conciseness saves, of course, a sheet or two, but this slight increase in the bulk of the work would have obviated the loss of time and the confusion now entailed on the student. In any case, references to a *locus citatus* should in no case go back beyond the page or the paragraph which contains them. A mysterious asterisk after each species or subspecies, often with one or more lines, is, so I am privately told, a very ingenious means, indicating the distribution within the area of the *Synopsis*; but there is nowhere an explanation in the two parts published.

These technical shortcomings, the blame for which has probably to be apportioned to some extent to the publishers, will certainly be regretted by many a student. Such are, however, the merits of the contents that he will gladly, though with a sigh, put up with them. The descriptions are, on the whole, short, clear, and in exemplary German; the differential characters are emphasized by spaced letters; the distribution within the area as well as without is indicated in a more general way in the case of widely distributed species, and more specialised in the case of rare or local forms; the literary references and synonyma are carefully selected; a list of vernacular names of the more popular species, in the principal languages of the area of the *Synopsis*, is added after the Latin name; the etymological derivation of the scientific names is given in foot-notes, with almost pedantic care and with scholarly accuracy; finally, paragraphs containing critical, explanatory, or historical notes, showing a marvellous familiarity with the respective literature, follow the descriptive text in small print. The author is rather a purist in linguistic questions, and sometimes over-erudite.

One more feature of the *Synopsis* must be mentioned. Though not absolutely original, it is a new and very important departure in a work which may be expected to exercise in future a great influence on kindred books, and particularly on local floras. The author says, "The literary reference indicating where the name adopted in this work of a species, subspecies, race or variety appears for the first time, or the so-called author quotation is not placed at the head of the respective description, as hitherto usual, but in the paragraph devoted to the synonymy where, logically, its proper place is. Ernest H. L. Krause (*Mecklenb. Flora*, S. V.) has been right in pointing out that the old custom, though commendable in itself, has enticed ambitious people to create as many new names as possible, thus injuring the stability of scientific nomenclature." We do not believe that these ambitious people will stop their nefarious practice for a moment, because the author and his school do not quote them at the head of their descriptions, but a few lines lower down. It is, however, gratifying to see that the author quotation is reduced to what it ought to be, *viz.* a literary reference, and that there is no more talk of "justice" where correctness, precision, and the particular requirements of the case are all that is to be considered.

More than one flora, undertaken on a base as elaborate and broad as this *Synopsis*, though perhaps no one on such modern principles, has been begun within the last decade, and then suddenly collapsed because the author had overrated the working power of an individual. We might fear a similar fate for Ascherson's great *Synopsis*, if we did not know that the preparations for the work have already proceeded far, and that care has been taken to meet eventualities which might otherwise bring it to a sudden close.

O. STAPF.

Hortus Boissierianus: Énumération des Plantes cultivées en 1885 *à Valleyres* (*Vaud*) *et à la Pierrière* (*Chambésy, près Genève*) par EUGÈNE AUTRAN et THÉOPHILE DURAND: préface de M. F. CRÉPIN. Genève et Bâle: Georg & Cie. 8vo, pp. xi, 572. Price 12 fr.

THIS well-printed volume is more than its title implies; for, besides the enumeration of species, a brief bibliography is attached to each, with a note as to its nativity and distribution, and the date of first publication. The genera are similarly treated, with an additional entry as to the number and distribution of species in each. M. Durand has more than once shown his special fitness for work of this kind, and his association with M. Autran, the courteous curator of the Boissier Herbarium, has doubtless contributed materially to the value of the catalogue. This is the more apparent when we learn that the references have not been taken, as is too often the case, at secondhand; the compilers have, in every instance, themselves consulted the works referred to. It appears, however, from M. Crépin's interesting preface, that it is to Boissier's son-in-law, M. Barbey, the present owner of the collections, that we are indebted for the suggestion which has resulted in the present enumeration, which represents the species actually cultivated in the Gardens in 1885, the year of Boissier's death. The number of species in the Gardens exceeds five thousand.

Such a work does not lend itself to detailed review, but it may be well to call attention to the fact that it contains certain combinations—rendered necessary by the reduction or changed limitations of genera—which are here published for the first time, and must date from this publication. Such new names are carefully indicated thus:—"*Lathyrus Boissieri* Nob.—Orobus grandiflorus Boissier Fl. Or. ii (1873) 622." An excellent portrait of Boissier forms an appropriate frontispiece to the volume.

Icones Orchidearum Austro-Africanarum extra-tropicarum; or, Figures, with Descriptions, of extra-tropical South African Orchids. By Harry Bolus, F.L.S. Vol. I., Part II. London: Wesley. Aug. 20th, 1896. Price £1 1s. net. 8vo.

The field-botanists, students, and lovers of nature in South Africa, whom Mr. Bolus is especially anxious to serve, as well as all workers at orchids, will welcome the issue of the second part of this valuable book. The author, who is also the artist, and frequently too the collector or discoverer of the plants he describes and figures, is to be envied for the exceptional opportunities he has of studying living specimens of so interesting but difficult a group of plants, often in their native habitats. Cape orchids in particular are to be desired in a fresh condition, or at least preserved in some fluid in which they retain at any rate their natural form. In genera like *Disperis* and others of the sub-tribe *Coryceæ* so much depends on the shape of the generally highly complicated column, which it is impossible to restore to its natural shape when once the flower has been dried. Our thanks are due to Mr. Bolus for recording in so complete and attractive a manner the results of his work on the species of the Cape peninsula. It is with feelings of relief and pleasure that we refer to his book after, for instance, racking our brains over some miserably inadequate description by Reichenbach. We can quite sympathize with Mr. Bolus in his unsatisfactory attempt to fit a plant to *Disperis stenoplectron* Rchb. f. "It is impossible," he says, "to know certainly whether this is Reichenbach's plant," &c., with the usual animadversions on the conduct of the eccentric professor.

There is, we think, no better method of illustrating plants, from the botanist's point of view, than that generally followed here. The whole thing is sketched out in black and white, while the colour is indicated in the flower and its dissections and a portion only of the chief figure. The floral dissections are numerous, and have every appearance of accuracy. We would, however, suggest that ink-lines are better adapted for these details; chalk is admirable for the general sketch of the habit, but the sharper ink-line obviates any chance of confusion in the sometimes very complicated parts. The second portion of the book contains Plates 51 to 100, as well as the title-page, table of contents, and index to the whole volume. From the systematic table we find that 101 species and varieties have been figured. The tribe *Epidendreæ* are represented by *Liparis* and a *Bulbophyllum; Vandeæ* by *Eulophia*, *Angræcum*, and *Mystacidium; Neottieæ* by *Zeuxine*, *Platylepis*, and *Pogonia;* occupying in all twenty plates. The rest are devoted to the *Ophrydeæ*, by far the richest tribe in South Africa; they include fourteen species and one variety of *Satyrium*, twenty-two species of *Disa*, and nine of *Disperis*. A considerable number are Mr. Bolus's own introductions to science, while several are accredited to Mr. Schlechter.

Apropos of the latter, we notice a form of quotation which is likely to lead to confusion in the future, and to which, from past experience, we think it well to call attention. Several of Mr. Schlechter's species are referred to in "Engler's *Botanische Jahrbücher*, ined." As Mr. Bolus supplies a full description, a subsequent description in Engler's *Jahrbücher* is rendered unnecessary, and the species must at any rate always be quoted from the work now before us. If, however, Prof. Engler does admit them into his journal, we hope he will see that they are not again labelled "n. sp." We call to mind a paper by Dr. Kranzlin, entitled "Orchidaceæ Africanæ II.," which appeared in the *Botanische Jahrbücher*, Bd. xxii. Of twenty-eight "new species" therein described, nineteen had already been published (with descriptions) in Part C of the *Pflanzenwelt Ost-Afrikas*. As Prof. Engler is editor of both these works, it seems to us that he was in a position to know the date at which each would be published, and a reference should have been made in the latter to the former publication.

A. B. Rendle.

ARTICLES IN JOURNALS.

Ann. Scottish Nat. Hist. (Oct. 1). — J. W. H. Trail, 'Florula of a piece of waste ground at Aberdeen.'—A. Bennett, 'Notes on Mr. Scott Elliot's 'Flora of Dumfriesshire.' '—S. M. Macvicar, '*Eriocaulon* in Coll.'

Bot. Centralblatt (No. 40). — F. Ludwig, 'Weiteres über Fibonaccicurven' (1 pl.).—(No. 41). B. Lidforss, 'Zur Physiologie und Biologie der wintergrünen Flora.' — (Nos. 42, 43). H. Rothdauscher, 'Die anatomischen Verhältnisse von Blatt und Axe der Phyllantheen.'

Bot. Gazette (Sept. 23).—W. Trelease, 'Botanical Opportunity.' —B. L. Robinson, *Brassica Sinapistrum* and *B. juncea*.—J. W. Tommey, *Mamillaria Brownii*, sp. n. — L. M. Underwood & F. S. Earle, 'Distribution of *Gymnosporangium* in the South.' — G. E. Stone, 'Botanical Appliances.'

Bot. Zeitung (Oct. 16). — H. C. Schellenberg, 'Beiträge zur Kenntniss von Bau und Function der Spaltöffnungen' (1 pl.).

Bull. de l'Herb. Boissier (Aug.).—A. Bennett, 'Notes on Japanese Potamogetons.'—N. Zelenetsky, 'Des Prêles et des Fougères de la Crimée.'—F. N. Williams, 'Revision of *Herniaria*.'—A. de Coincy, *Caucalis homœophylla*, sp. n. — (Sept.). J. Amann, 'Application du calcul des probabilités a l'étude de la variation d'un type végétal.' — A. Jaczewski, 'Monographie des Tubéracées de la Suisse.'— N. Zelenetzky, 'Flore bryologique de la Crimée.' — A. Baldacci, 'Collezione botanica fatta nel 1894 in Albania.' — F. Kränzlin, *Schoenorchis Simmleriana*, sp. n. — N. Patouillard, '*Cyclostomella*, n. gen. d'Hémihystériés' (Appx.). — G. Schweinfurth, 'Sammlung Arabisch-Æthiopischer Pflanzen' (cont.). — H. Schinz, 'Die Planzenwelt Deutsch-Südwest-Afrikas.'

Erythea (Oct.).—A. J. Merritt, 'Pollination of California mountain flowers.'—H. E. Hasse, 'Lichens of Los Angeles.'

Irish Naturalist (Oct.). — R. Ll. Praeger, '*Medicago sylvestris* in Ireland.' — T. Johnson & R. Hensman, 'Algæ from Belfast Lough.'

Journal de Botanique (Sept. 16). — A. de Coincy, 'Plantes nouvelles de la flore d'Espagne.' — P. Hariot, *Entyloma Camusianum*, *Œcidium Isatidis*, spp. nn. — (Sept. 16, Oct. 1). A. Franchet, '*Araliaceæ*, *Cornaceæ*, et *Caprifoliaceæ* novæ e Flora Sinensi.'— (Oct. 1). E. Roze, *Aplococcus* (n. gen. *Cyanophyceæ*), *Microccus muscivorus*, sp. n.

Nuovo Giorn. Bot. Ital. (Oct. 15). — A. Preda, 'Contributo allo studio delle Narcissee italiane' (1 pl.: concl.). — E. Rodegher, 'Elenco delle Epatiche della provincia di Bergamo.'—E. Migliorato, 'Sulla natura assile delle spine delle Auranziacee.' — E. Baroni, 'Illustrazione di un Orto Secco del Principe della Cattolica, da questi donato a P. A. Micheli nell' anno 1733.' — U. Martelli, *Aponogeton Loriæ*, sp. n. (1 pl.).

Oesterr. Bot. Zeitschrift (Sept.).—J. Hoffmann, 'Zur vergleichenden Anatomie der Arten der *Sempervivum*.' — F. Pfeiffer & R. v. Wellheim, '*Thorea ramosissima*' (1 pl.). — A. Hausgirg, 'Zur Kenntnis der gamo- und karpo-tropischen Blütenbewegungen der Gräser.' — J. Tobisch, 'Zur Pilzflora von Kärnten.' — F. Arnold, 'Lichenologische Fragmente.'

BOOK-NOTES, NEWS, &c.

We announce with great regret the death of Dr. Trimen, for many years Editor of this Journal, which took place at Peradeniya on Oct. 16th. A portrait and memoir of the deceased botanist will appear in our next issue. We have also to record the death of Baron Ferdinand von Mueller, which took place at Melbourne on the 9th of October. A fuller notice will follow in due course.

The *Bulletin of Miscellaneous Information*, headed "May and June" and issued in October, consists mainly of miscellaneous extracts from previously published works. The preface to part i. of the continuation of the *Flora Capensis*, the introduction to the Kew *Hand-list of Coniferæ*, citations from *Nature* and the *Demerara Argosy*, a report of Sir Alfred Moloney on British Honduras, and various selections from official correspondence make up a number devoid of original matter and of no botanical interest. Appendix ii. containing a list of the new garden plants of 1895, appeared in September. It is modestly claimed for these lists that they are "indispensable to the maintenance of a correct nomenclature," and, if this be so, it seems desirable that they should be issued earlier in the year.

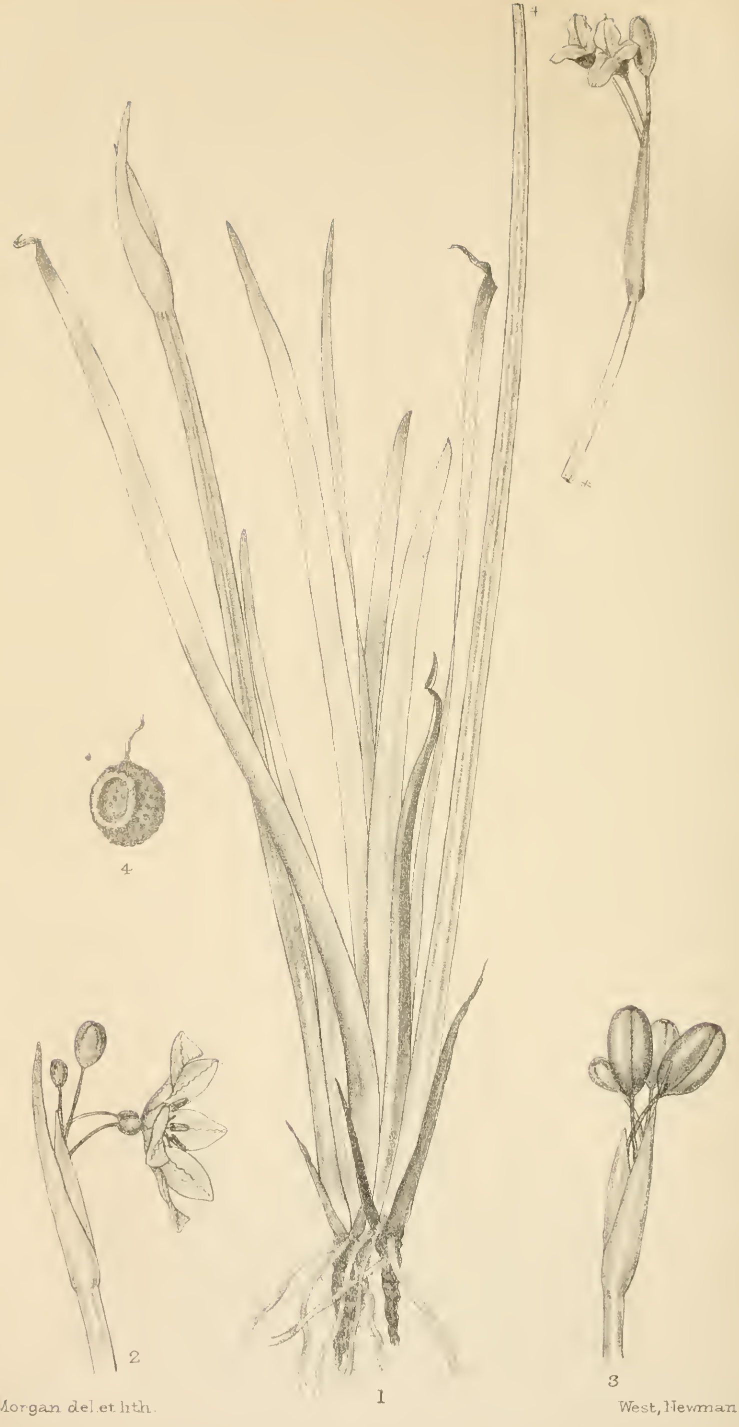
Captain Bartle Grant, having brought together from various works descriptions of Burmese Orchids (including those of the Andaman Islands), has printed them in a volume entitled *The Orchids of Burma* (London, Quaritch; 10s. 6d. net). Those who, like the author, feel the need of a book of reference dealing specially with Burmese orchids will find this a very useful volume, more especially as it includes the information given by Mr. Parish in Theobald's edition of Mason's *Burma*. Captain Bartle Grant has not, so far as we have seen, himself added any new species to the list, but the work of compilation seems to have been done with care and accuracy.

We regret to record the death of Professor Thomas King, which took place on September 14th at Fochabers, where he had gone to attend the Conference of the Cryptogamic Society of Scotland, of which he was Hon. Treasurer. Mr. King was born on April 14th, 1834, at Yardfoot, Lochwinnoch, Renfrewshire. When about twenty years of age he removed to Glasgow, where for several years he attended the Training College of the Free Church of Scotland, with the view of qualifying himself for educational work. He taught English in schools at Glasgow, Paisley, &c., from 1858 till 1864, when his health broke down, and he afterwards obtained an educational appointment at Valparaiso, Chile, where he remained for nine years. While resident in that country he formed extensive collections of plants, &c., and was successful in discovering several species new to science. He returned to Glasgow in 1873. Mr. King held the certificate of the Department of Science and Art as a teacher of Botany, and was lecturer on Botany in the Glasgow and West of Scotland Technical College, Veterinary College, and various other educational institutions. In 1889 he was appointed Professor of Botany in Anderson's College Medical School, Glasgow. At the time of his death he was President of the Natural History Society of Glasgow, and an office-bearer of most of the scientific institutions in that city. A few years ago he edited and published an enlarged edition of Hennedy's *Clydesdale Flora*. He has written numerous papers on Botany, many of which have been published in the *Proceedings* of the Glasgow Natural History Society. He was specially interested in Cryptogamic Botany, and was a recognized authority on mycology. In private he was one of the most genial and amiable of men, and his loss will be keenly felt by a very wide circle of friends.—D. A. B.

A Botanic Garden has just been founded in New York, of which Dr. N. L. Britton has been appointed Director; Prof. L. M. Underwood succeeds him at Columbia University. The first volume of the new *Illustrated Flora of the Northern United States* has just made its appearance; we shall have more to say of it later.

A "Flora of our Ten-mile Radius," by Mr. J. Hepworth, is appearing in the *Rochester Naturalist*.

Thomas Hick, B.A., B. Sc. (Lond.), A.L.S., who died on July 31st at the residence of his son, Dr. Hick, at Bradford, was born at Leeds on May 5th, 1840. Through an accident involving the loss of several fingers of his left hand, he was disabled from following his original employment, and this happily led to his eventual devotion to Botany professionally. After having filled various scholastic offices, including that of head-master of the Royal Lancastrian School, Leeds, he became Assistant-Lecturer in Botany at Owens College, Manchester, in 1885. Before this date, however, he had done capital botanical work, notably papers in this Journal for 1884 and 1885 on protoplasmic continuity in Algæ—papers which would have made the reputation of a young man from an English University (not London). Gradually Hick became more and more drawn into fossil botany, partly from the influence of Prof. Williamson, with whom he worked in great amity. When Prof. Williamson resigned, Hick continued to work loyally with Prof. Weiss and to do the good teaching work at Owens College which made him so popular with his colleagues and students. There was, however, more than good teaching—there was the open-hearted, enthusiastic, and genial nature of a thoroughly good man at work in all he did, and his methods of dealing with his men were always the outcome of this fine character. He lived a good, natural, honest, and consistent life, if ever any man did, and faced his troubles with fine resolution, remaining steadfast to his aims throughout. Such men need no memorial while their friends live; but with a view to perpetuating his memory in an appropriate way, a Committee has been formed (including Mr. Cosmo Melvill, Mr. Leo Grindon, and Prof. Hickson, with Prof. Weiss as Secretary) to raise a sum of money for the purchase of his collection of fossil plants and part of his library, and to deposit them in the Manchester Museum as the Hick collection. Prof. Weiss (The Owens College Manchester) will receive subscriptions.—G. M.



R. Morgan del. et lith. West, Newman imp.

Sisyrinchium californicum *Dryand.*

IN MEMORY OF HENRY TRIMEN.

(With Portrait.)

Henry Trimen was born on October 26th, 1843, at 3, Park Place Villas, Paddington, London. He was educated at King's College, London, firstly in the school and subsequently on the medical side of the College. Very early in life he showed a strong liking for natural history, and collected specimens of animals and plants with much ardour. His elder brother Roland was devoted to the same pursuits, and well remembers how, when it became a matter of necessity to make a choice among the "omnium gatherum" of organic objects amassed, it was solemnly decided that Henry should restrict himself to the study of plants, while his senior was to devote his attention to insects. Holidays and half-holidays were almost always occupied by collecting excursions in the environs of London; and school vacations, with the annual visit of the family to the seaside, gave golden opportunities for field-work which were never neglected. While he was still at King's College School he had begun to form an herbarium, and frequently visited the Botanical Department of the British Museum for the determination of his collections. He was then a steady and careful worker, and a careful observer of all the conditions of plant-life.

He began his medical studies at King's College in the autumn of 1860. The winter of 1864 he spent at Edinburgh University, where, besides attending to his medical studies, he acted as clinical assistant to Prof. Bennett. He joined the Edinburgh Botanical Society, and secured the friendship of Prof. Balfour and many of the younger botanists of Edinburgh. He graduated M.B. with honours at London University in 1865, and for a short time he acted as district medical officer in the Strand district during an epidemic of cholera.

It was in 1864 that I made Dr. Trimen's personal acquaintance. The Society of Amateur Botanists, which had been established in 1862 and of which some account will be found in this Journal for 1864, p. 287, was then in the best period of its not very long existence, and Mr. Newbould took me to one of the meetings and introduced me to Mr. Trimen and to Mr. Dyer—two names which were then, like their possessors, intimately associated. To a lad of eighteen, strange to public meetings and shy of strangers, these young men of twenty-one seemed superior beings—an impression intensified by a certain loftiness of tone which, in Trimen's case, soon disappeared upon more intimate acquaintance. Trimen and Dyer were the leading spirits of the Society, which, however, also numbered men who have distinguished themselves in botanical work during later life (of whom Mr. W. G. Smith is a conspicuous example), as well as others whose attachment to botany was but temporary.

At this period, and for many years after, Trimen took a prominent part in the work of the Botanical Exchange Club, and this brought him into frequent communication with Mr. J. G. Baker, which developed into personal friendship when the latter came to town in 1866. Somewhat later than this he formed the acquaintance of the Hon. J. Leicester Warren (afterwards Lord de Tabley), who, with Mr. Newbould and Mr. Dyer, were his chief botanical friends. With the last of these he projected in 1866—in which year he added *Wolffia arrhiza* to our British list—the *Flora of Middlesex*, which, on its publication in 1869, was at once recognized as an epoch-making book in the history of British botany, and has formed a model for subsequent compilers of local floras. It is unnecessary to speak at length of a book so well known and so deservedly admired. It has always been supposed that Dr. Trimen was responsible for the larger portion of the undertaking; and the interleaved copy of the *Flora*, which, on going to Ceylon, he left in the Department of Botany, is full of MS. notes which will interest future investigators of the plants of the county.

Although he had completed his medical course with distinction, it was manifest that Trimen's vocation lay in the direction of botany. He was well acquainted with Mr. Bennett and with Mr. Carruthers, the latter of whom had shown every encouragement to him and to Mr. Dyer at the beginning of their botanical career, and had thus contracted a warm personal friendship with them, which in Trimen's case was never broken. Mr. Dyer had also a desire for botanical work, and, as I have said elsewhere,* it was only after much deliberation that Trimen was chosen to fill the post of assistant in the Department of Botany in the British Museum. It is curious to speculate on the turn that events might have taken had the choice been otherwise. In 1877 Trimen became botanical lecturer to St. Mary's Hospital—a post which he retained for many years.

Although it was not till 1870 that Trimen's name appeared on the title-page of this Journal in the capacity of assistant-editor, he had for some time had much to do in its management. During Seemann's frequent absences from England, Mr. Carruthers had acted as editor, although his name never appeared in that capacity; but from 1870 onwards Trimen was responsible in every way for the conduct of the Journal, although his name did not appear as editor until after Seemann's death in 1871. He at once reduced the price of the Journal and introduced many new features, the result being an increased circulation and a much improved table of contents. The pecuniary loss entailed, however, was considerable, although towards the end of his editorship the Journal paid its way. The Journal has from the first been unofficially associated with the British Museum. Dr. Seemann found the Botanical Department a convenient place of reference, and subsequent editors have been members of the Museum staff, so that, although the Museum is in no way responsible for what may appear in its pages, it has furnished a convenient medium—more needed, perhaps, formerly than at present—for keeping the botanical world *au courant* with what is done in the National Herbarium. Dr. Trimen, as a loyal servant of the Trustees, systematically recorded the progress of the collections, and the importance of the records thus published is shown by the fact that in such works as De Candolle's *La Phytographie* this Journal is frequently cited as the source whence information regarding the Museum collections has been derived. Besides the work of editing, Dr. Trimen enriched the Journal with numerous communications dealing with British plants from various aspects, bibliographical and other matters, descriptions of new genera and species, reviews of books, and the like. His work throughout is characterized by extreme care. He did much to elucidate the British species of such critical genera as *Polygonum* and *Rumex*, and in the latter genus he commemorated his friend Mr. Warren by naming in his honour a form subsequently identified with *R. Knafii*.* He also contributed to the Linnean Society's Journal and to other periodicals; fifty papers stand under his name in the Royal Society's *Catalogue of Scientific Papers*.

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* *Journ. Bot.* 1895, 183.

In 1872–3 Trimen took a leading part in the promotion of certain reforms in the Linnean Society, of which body he had become a Fellow in 1866. The bringing about of these was attended by a period of excitement rare in the annals of a learned body. Some account of what took place may be found in the Journal for these years; and the result was in every way beneficial, although in the course of the proceedings necessary to secure reform certain regrettable incidents occurred. Those who remember the formal meetings of pre-reformation days will agree that the contrast between then and now is nothing short of startling. It is to Trimen that we owe the small but important regulation by which the dates of publication of each part of the Journal are printed on the back of the title to each volume.

In 1875 began the publication of what was in some respects Trimen's most noteworthy work—*Medicinal Plants*—which he undertook in collaboration with Prof. Bentley. This was not concluded until 1880, the last part having been published in February of that year, after Trimen had left England for Peradeniya. This important change in his career occurred in December, 1879, to the great regret of his colleagues in the Museum.

This seems a fitting place in which to pay a tribute to those personal characteristics which made Trimen popular among a large circle of friends. Bright and cheerful in manner, with a sufficient sense of humour and a good acquaintance with general affairs and literature, he was an extremely pleasant companion; while as a Museum official he was always courteous and helpful to enquirers, and both ready and willing to impart the knowledge he possessed. "His kind-hearted and cheerful nature," writes his brother, "with his unflagging zeal and activity in the pursuit of his favourite science, won him many faithful friends and associates—especially when he held the post of Lecturer on Botany at St. Mary's Hospital, and led his class in the field no less ably and enthusiastically than he did in the lecture-room. I think that his life," he adds, "was, until quite lately, a very happy one. He was able to give himself unrestricted to the work he loved best, and in its practical application to the tropical gardens of which he was in charge for sixteen years was unquestionably most successful. He was free from family cares or pecuniary anxieties, and up till two years ago enjoyed unusually good health, while he had the happy gift of winning the affection and respect of all those with whom he had to do."

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* See *Journ Bot.* 1896, 79.

On his arrival in Ceylon, Trimen threw himself with characteristic energy into the various branches of his work. This involved an entire rearrangement of the Gardens—a task the need and execution of which are well set forth by M. Treub, of Buitenzorg, a highly competent judge in such matters. The Garden, he says, was "for many years under the direction of Dr. Thwaites, a man of real merit, but who thought a botanic garden in a tropical country should be in some manner a reduced copy of the virgin forest. This system, more original than meritorious, excludes any methodical arrangement of plants, and necessarily restricts the number of specimens. Dr. Trimen, as soon as he arrived in Ceylon, realized the disadvantages of the plan of his predecessor. To distribute over an area of sixty hectares, without any order, a great number of plants, for the most part not labelled, was fatally to embarrass the scientific use of the rich collections that had been brought together. So Dr. Trimen did not hesitate to adopt a new arrangement of plants according to the natural system, and to label them as far as it was possible for him to do so. With branch establishments upon the plain and upon the mountain, the garden of Peradeniya has before it a brilliant future."*

His life in Ceylon was very pleasant, any feeling of isolation being greatly modified by the visits of other botanists, such as Dr. Marshall Ward and Mr. H. N. Ridley, or of other scientific men, such as Prof. Ernst Haeckel, who, in his *Visit to Ceylon*, speaks warmly of Trimen's genial hospitality and "valuable instruction"—"the seven days I spent in his delightful bungalow were indeed to me seven days of creation." In such company Trimen would take expeditions into parts of the island hitherto unexplored by him, never failing to discover some interesting novelties.

This is not the place in which to consider Trimen's services to economic botany; his annual reports show that he developed the resources of the Garden in every direction, and his contributions to quinology were important. But something must be said about his botanical work in Ceylon. As soon as he had settled down, he became conscious of the need of a flora of the island. In 1885 he issued a catalogue of the plants, with the vernacular names and references to Thwaites's *Enumeratio;* and in this Journal for the same year he published a series of notes on Ceylon plants, in which were included many novelties: a further list of additions will be found in the volume for 1889. During a visit to England in 1886, he went carefully through Hermann's Ceylon Herbarium, the basis of Linnæus's *Flora Zeylanica*, and published in the Linnean Society's Journal (vol. xxiv.) a list of the plants therein contained, with the modern equivalents of the Linnæan names. The short preface to this is an excellent example of Trimen's work, giving as it does a history of the herbarium, and general notes upon its contents.

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* *Annual Report of Smithsonian Institution*, 1889–90, p. 390.

These of course were but preliminaries to what was to have been the great work of his life—which, alas! he was not destined to finish. In 1893 appeared the first volume of the *Handbook to the Flora of Ceylon*—a work which, as I said when reviewing it in these pages,* occupies towards colonial floras a position similar to that which the *Flora of Middlesex* holds with regard to that of this country. To that review readers must refer for an account of the work. Had the author been spared, it was his intention, as soon as this large undertaking was completed, to compile from it a handbook of Ceylon plants, analogous to Babington's *Manual*.

But it will cause no surprise to those who saw him when he was home last year that Trimen was unable to complete his enterprise. He had for years suffered from deafness, and this had become total, so that he was only able to carry on conversation with the aid of a pencil and paper. One leg was then entirely paralyzed, and although in spite of these and other troubles he maintained his old cheerfulness of demeanour, it was very painful to his old friends to see the state to which he had been reduced. We had hoped that he would not go back to Ceylon, but there were reasons—among them that anxiety to complete his Flora which, as we shall see, was with him literally to the last—which induced him to do so; and I think no one expected he would ever return to England.

I am indebted to his elder brother, Mr. Roland Trimen, a distinguished entomologist, for the following account of the closing scene of Trimen's earthly career:—

"After the attack in August last, which deprived him of all power in his left leg, my brother seemed to rally somewhat, though confined almost entirely to his room, being only taken out into the Gardens at his own request two or three times. On Wednesday morning, October 14th, he was suddenly seized with a feeling of chilliness and violent shakings of the hands and arms, his voice being at the same time somewhat affected. This he himself did not regard seriously, but Mr. Freeman at once went to Kandy to summon the doctor. He lay helpless all the day, and had to be fed with what little nourishment he was able to take. In the later half of the night he slept well, and on Thursday morning his first words were that he felt rather better, and must get up and do a little work at the 'Flora.' This he actually did in the afternoon, and with great effort made a few notes, which, Freeman writes, are scarcely decipherable. This pathetic endeavour still to work on seems to have been the last flicker of his strength; for during the sleepless night of Thursday, 15th, his attempts to speak were almost inaudible, and on Friday he rapidly passed into a state of coma, though sometimes looking up and smiling when anything was done for him. He was evidently sinking all the afternoon and evening, but was as evidently free from any pain. Between nine and ten in the evening Mr. Freeman was called away for a little, and the hospital attendant on his return reported a change. As Mr. Freeman entered the room Henry turned his head towards him, and then lay quietly back, and passed away without a tremor or movement of any kind.

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* *Journ. Bot.* 1893, 375.

"The funeral took place at Kandy on the morning of Sunday, October 18th, and was attended by two hundred of the European community and by a great number of natives, both head-men and Garden employés. Henry's old servant, Bob Appu, never left the back of the hearse throughout the route from Peradeniya; and on the previous day my nephew writes that he had about 400 applications from natives (old servants, village head-men, &c.) to see 'the old master.' The burial took place in the Mahaiyawa Cemetery, Henry's body being laid not far from the resting-place of his predecessor, Dr. Thwaites."

[The portrait here reproduced was taken by Messrs. Cameron during Dr. Trimen's visit to England in 1887.]

James Britten.

SISYRINCHIUM CALIFORNICUM Dryand.

By A. B. Rendle, M.A., F.L.S.

(Plate 364.)

The plants from which the following description was made were found last June, by the Rev. E. S. Marshall, in marshy, rushy meadow-land, a mile or more north of Rosslare station, near Wexford, Ireland, as already indicated in this Journal (*antea*, p. 366):—

Plants 6–12 in. high, glabrous, acaulescent, and cæspitose in habit. Rhizome ascending, tapering, reaching 1¾ in. in length, with a diameter of 2 lines beneath the shoot, bearing numerous brown fibrous roots about ¾ line in diameter, and ending in the erect flowering shoot. Leaves generally six in number, distichous, consisting of a flattened sheathing base with a narrow scarious transparent margin enclosing the younger leaves and the peduncle, and passing gradually into a linear flattened blade tapering towards a rather blunt apex. Length from 3½–8½ in., according to the size of the plant, and from 1½–2 lines in greatest width. Blade traversed by 5–6 parallel veins. Peduncles, two of which are generally present, overtopping the leaves (the largest measured 9 in. below the spathe), leafless, compressed, and broadly winged, width 1 to 2 lines. Bracts distichous and sheathing; the two outermost, or spathes, completely enclosing the rest, and foliaceous in texture. Outer spathe erect, tapering gradually upwards to a subacute apex from a broad flattened sheathing base, the margins of which are connate for about one-fourth of the length of the whole leaf, and where free have a narrow membranous colourless or pinkish edge; length 1¼–2 in., with a greatest width of 1¾–2¾ lines at the top of the connate sheath-base. Inner spathe somewhat similar in shape, but the broad membranous edges free to the base and overlapping; length half to two-thirds that of the outer spathe; greatest width 1½–2 lines just above the middle, from which it tapers rapidly to a subacute apex; completely sheathing the inner bracts and the lower half of the slender flower pedicels. Inner bracts membranous, lanceolate, with white scarious margins and apex, diminishing in size towards the centre of the inflorescence, the outermost being about five-sixths the length of the inner spathe; each succeeding bract sheathes the younger ones. Flowers 4 to 5, solitary in the axil of each bract, except the two uppermost; apparently at the same level, owing to the non-development of internodes between the bracts. Pedicel slender, stiff, about 1 in. long in the flower, and curved into a horizontal position on leaving the spathe; in the fruit reaching about 1¼ in., and straight or less curved. Perianth-leaves six, spreading, delicate, transparent, yellow when fresh, orange-coloured when dry, bluntly oval, narrowing at the base, with 5–7 dark sharply-marked crinkled veins; about ½ in. long by about ⅕ in. broad. Stamens three, and about equal in length to the three filiform styles, and less than half the length of the perianth. Ovary inferior, oval, 1½ line long, Capsules sub-erect or slightly nodding, trigono-ellipsoidal, ½ in. or less in length, and a little more than ¼ in. or less in diameter. Seeds borne on slender filiform stalks, sub-spherical, with a large rounded depression on one side; testa black, hard and rugose. As frequently happens in the genus, the plant stains the paper in which it is pressed a purple colour.

S. californicum, according to a note in Aiton, *Hortus Kewensis*, iv. 136 (1812), where it is described, presumably by Dryander, was introduced in 1796. We have in the Banksian herbarium a specimen brought from Port Bodega, in California, by Archibald Menzies, and on the same sheet a specimen was subsequently mounted from Hort. Kew., with the date 1798. It is interesting to note that the taller specimens recently found in Ireland closely resemble the plant brought from California by Menzies a century ago. The earliest name is *Marica californica* Ker, in the *Botanical Magazine*, t. 983 (1807). The drawing for the plate was made "at Mr. Salisbury's botanic garden" at Mill Hill. Salisbury himself (in the *Trans. Hort. Soc.* i. [1820], p. 310) raised the plant into a new genus, *Hydrastylus*, a name which "was suggested by the late Mr. Dryander." *Apropos* of its cultivation he says: "A perfectly hardy plant, I believe; at least many seedlings lived through the winter of 1806 in the open air at Mill Hill; and if sheltered under a cucumber-frame it may certainly be preserved, flowering and ripening seeds all summer."

It occurs native in California and Oregon.

IRISH PLANTS COLLECTED IN JUNE, 1896.

By the Rev. E. S. Marshall, M.A., F.L.S.

On the 9th of this month I revisited Clonbur, on the borders of W. Galway and E. Mayo, in order to study afresh one or two doubtful plants seen in 1895, which Dr. Shoolbred and I had been unable to deal with in our recent paper (see p. 250); particularly an *Allium* from the limestone, which I hoped to find in flower. Unfortunately the season was even drier than last year, the vegetation being mostly burnt up and withered; however, this proved not to be an unmixed evil, as the brambles were, in general, sufficiently far advanced to afford fairly good material. While waiting for a train at Claremorris, *en route* for Dublin, I came across a few things of some interest. The last three days of the short trip (ending on the 18th) were spent at Wexford. Mr. H. C. Hart carefully worked the neighbouring coasts and the Slaney Valley in 1881 and 1883, and Messrs. Barrett-Hamilton and Moffat have recently (1893) contributed an essay on 'The Characteristic Plants of Co. Wexford' to the *Irish Naturalist;* for the loan of these papers I am much indebted to Mr. R. Lloyd Praeger. The immediate vicinity of the town appears to have been hitherto but little examined, and during my brief stay I was fortunate in meeting with several rare or critical species. This part of the county should repay a closer search; it is especially rich in brambles, judging by the great variety met with on my only inland expedition.

My thanks are due to Mr. Arthur Bennett for general help in determining difficult specimens; Mons. F. Crépin has seen some of the Roses, and the *Characeæ* are vouched for by Mr. H. Groves. Nearly all the Rubi have been scrutinized by Rev. W. Moyle Rogers, who found among these several which were quite new to him, two or three of them being not improbably undescribed forms.

The figures prefixed are those of the *Cybele Hibernica;* 4 standing for Co. Wexford, 8 for W. Galway, and 9 for E. Mayo.

Ranunculus Baudotii Godr. 4. Ditches near the S.E. side of Wexford Harbour, N. of Rosslare.

Fumaria confusa Jord. 4. Roadside, Rosslare. — *F. muralis* Sonder. 4. Hedge opposite Crossbridge Cemetery, near Wexford.

Cochlearia anglica L. 4. The form of this which grows abundantly on the S.E. shore of Wexford Harbour is very untypical, and agrees well with Hooker's description of var. *Hortii* Syme; but of that plant I have not yet seen authentic specimens. The *C. danica* of the same locality is quite normal.

Raphanus maritimus Sm. 4. With *C. anglica* at one spot, very scarce.

Polygala oxyptera Reichb. 8. Hill-pasture above Lough Corrib, about four miles W. of Cong. 9. In a similar situation, but on limestone, S. of Cong.

Cerastium tetrandrum Curt. 8, 9. Locally abundant on limestone (apparently flooded in winter), S. of Lough Mask.

Lavatera arborea L. 4. A single specimen was found on the N. embankment of Wexford Harbour; it may have been derived from a cottage garden on the opposite shore, where I saw this growing.

Linum angustifolium Huds. 4. Pastures and grassy banks near Wexford, not unfrequent. Distrusted as a native by Messrs. Barrett-Hamilton and Moffat; on what grounds I do not know, as I never saw it looking more thoroughly wild, and the authors of the *Cybele* appear to accept it as such.

Geranium columbinum L. 9. Near the S.E. end of L. Mask; scarce.

Erodium cicutarium L'Hérit. 4. A densely glandular form grows plentifully on the Rosslare sandhills; it is probably the var. *glandulosum* Bosch, and may be identical with *E. glutinosum* Dumort. *E. moschatum* was found sparingly on the outskirts of Wexford.

Trifolium arvense L. 4. Near the S.E. shore of Wexford Harbour, in small quantity.

Rubus cariensis Rip. & Genev. 4. Near Wexford. New to Ireland, and only known in England from Devon and Dorset.—*R. incurvatus* Bab. 4. Near Wexford. 8. Clonbur; a limestone form, and not quite typical. — *R. rhamnifolius* Wh. & N. (sp. coll.). 4. Rosslare. I believe, the usual English plant (*R. cardiophyllus* Lef. & Muell.). 8. Shore of L. Corrib, about three miles W. of Cong; a very pretty little form, remarkably erect, with small petals, which is identical with Surrey specimens gathered by Capt. Wolley Dod on Ham Common and Barnes Common. — *R. pulcherrimus* Neuman. 4. Rosslare.—*R. Selmeri* Lindeb. 8, 9. Frequent about Clonbur and Cong. — *R. Schlechtendalii* Weihe. 4. Near Wexford. *R. Sprengelii* Weihe. 4. About two miles W. of Wexford; only one bush was met with.—*R. hirtifolius* Muell. & Wirtg. 8. In a thicket by L. Corrib, about three miles W. of Cong. — *R. danicus* Focke. 4. Near Wexford. 9. On limestone S. of L. Mask; "very like Gelert's *R. danicus* var. *divergens* from Flensborg, which seems to go off from Focke's plant towards *leucostachys* and *micans*" (Rogers). —*R. pyramidalis* Kalt. 4. W. of Wexford.—*R. leucostachys* Schleich. 4. About Wexford. The var. *angustifolius* Rogers (new to Ireland) is frequent by roadsides, and exceedingly well-marked.—*R. Borreri* Bell Salt. 4. In several spots near Wexford.—*R. Leyanus* Rogers. Near Wexford; "one of the more weakly armed forms" (Rogers). —*R. Radula* Weihe. 9. I certainly saw this (on limestone) near the S.E. end of L. Mask, and believe it to have been the var. *anglicanus* Rogers; but the panicles being immature, no specimens were taken, and I failed to meet with it again.—*R. scaber* Wh. & N. 8. Shore of L. Corrib, two or three miles W. of Cong; also about Clonbur, but apparently rare and local.—*R. fuscus* Wh. & N. 8, 9. A form (or variety) of this is frequent about Clonbur and Cong.— *R. hirtus* W. & K., var. *rubiginosus* (P. J. Muell.). 4. Remarkably abundant to the W. and N.W. of Wexford; a beautiful bramble. New to Ireland. — *R. dumetorum* Wh. & N. (sp. coll.). 4. Roadsides about Wexford. *R. corylifolius* Sm. (sp. coll.) occurs in similar situations; I did not see good *sublustris*. — *R. Balfourianus*

Blox. 9. Thicket by L. Corrib, two miles S. of Cong; most characteristic, with very large peach-pink flowers, and styles exceeding the stamens. — *R. cæsius* L. 4. Sandhills near Rosslare. An allied plant, which I believe to be specifically distinct, is frequent about Clonbur, in both counties, and occurs near Wexford. Mr. Rogers cannot name it at present.

Potentilla procumbens Sibth. 4. Near Wexford. — *P. reptans* × *silvestris?* 4. About three miles from Wexford, for twenty yards or so along a roadside hedge. Intermediate in most respects, though also having a certain look of *P. procumbens;* but the stipules are usually trifid.

Rosa pimpinellifolia × *tomentosa* (*R. involuta* Smith, var.). 8. On limestone between Cong and Clonbur. I also found this in several fresh stations near Clonbur, in E. Mayo. *R. tomentosa* is remarkably abundant on the limestone S. of L. Mask, in both counties, having as a rule the stiff, dwarfer habit and straightish prickles which usually help to distinguish *R. mollis.* It was gathered near Wexford, in two different forms.—*R. rubiginosa* L. 4. In a hedge about two miles W. of Wexford; remote from houses, but probably bird-sown. — *R. sepium* Thuill. 9. Abundant by the shore of L. Corrib, two or three miles S. of Cong; a handsome plant, uniformly white-flowered, which M. Crépin calls a variety, but without giving it any special name.

Caucalis nodosa Scop. 4. Banks N. of Wexford Harbour.

Galium verum L. 4. A small, prostrate, pale-flowered form, abundant on the Rosslare sandhills, seems to be the var. *maritimum* DC.

Picris echioides L. 4. Embankment on the N. side of Wexford Harbour. Only two or three plants were seen.

Utricularia intermedia Hayne. 9. In a ditch near L. Corrib, about a mile and a half S. of Cong.

Salvia Verbenaca L. 4. Roadside banks, Rosslare. *Marrubium* also occurs here, but is evidently an escape.

Chenopodium rubrum L. 4. The var. *pseudo-botryoides* Watson is associated with the type in hollows among the sandhills at Rosslare.

Polygonum maculatum Trimen & Dyer. 4. One plant was found on the quay at Wexford, where it is apparently a mere casual.

Orchis incarnata L. 4. Sandhills and rushy pastures both N. and S. of Wexford Harbour. 9. Moory ground S. of Cong.

Ophrys apifera Huds. 8. On a hill just behind the village of Clonbur.

Habenaria bifolia R. Br. 9. Extraordinarily plentiful this season about Claremorris and Hollymount; also seen near Cong.

Sisyrinchium californicum Dryander. The strange occurrence of this W. American plant near Rosslare, already recorded on p. 366, is still a complete puzzle to me, in the absence of precise local knowledge. All I can at present say is that I never saw anything *look* less like an alien, and that the introduction of this species, which does not appear to be a garden favourite, is difficult to account for by the surroundings.

Allium ? Schœnoprasum L. 9. Towards the end of my former stay at Clonbur I had met with a small garlic growing upon a rocky headland of L. Mask, between two and three miles E. of Clonbur, which, except in point of size, reminded me a good deal of the Lizard *A. sibiricum.* This year, to my great disappointment, not a vestige of it was to be seen there; but a careful search resulted in the discovery of four or five fresh stations (all on the limestone), scattered over an area of two miles or thereabouts. Not a single flowering plant could be found; indeed, most of the specimens were but an inch or two in height, growing as they did in shallow, rocky soil, exposed to the effects of a ten weeks' drought. In my garden the leaves of last year's specimens were six or eight inches long, showing much resemblance to the Cornish chives; the two plants are, however, clearly distinct. The habit, small bulbs, and aggregated growth are quite right for *A. Schœnoprasum*, but flowers are requisite for a certain determination. I feel no doubt at all that this is native; it occurs within 150 yards of W. Galway, and probably extends into that county, though I searched diligently for it without success.

Lemna trisulca L. 9. Claremorris Lake and adjoining ditches.

Potamogeton Friesii Rupr. 9. With the last. — *P. pusillus* L., var. *tenuissimus* Koch. 4. Slow stream half a mile N. of Wexford Harbour, and about three miles from the town. — *P. pectinatus* L. 4. In a large lagoon or lake, where there is a swannery, N. of and adjoining Wexford Harbour. — *P. interruptus* Kit. 4. Ditches on the S. side of Wexford Harbour; apparently var. *scoparius.*

Ruppia rostellata Koch. 4. Very plentiful on the mud-flats, S. side of Wexford Harbour, as are *Zostera marina* L. var. *angustifolia* Fr. and *Z. nana* Roth.

Eleocharis uniglumis Reichb. 4. Marsh ditches to the N. of Wexford Harbour.

Carex teretiuscula Good. 9. Between Claremorris Lake and the railway-station. *C. disticha* grows close by.—*C. pendula* Huds. 9. By L. Corrib, in the grounds of Ashford House, near Cong. Possibly introduced, but looking like a native; the locality is in a rather remote part of the demesne.—*C. extensa* Good., var. *pumila* Anders. 4. S.E. side of Wexford Harbour; well-marked. I also saw the type, not far off.—*C. chrysites* Link. (*C. flava* var. *cyperoides* Marss.). 4. E. side of Wexford Harbour.

Trisetum pratense Pers. 4. Not uncommon near Wexford.

Glyceria distans Wahlenb. 4. Marsh N. of Wexford Harbour. — *G. Borreri* Bab. 4. Plentiful in a salt-marsh near the station, Wexford; also in marshes N. of the harbour.

Agropyron pungens R. & S., var. *aristatum* Parl. (*teste* Hackel). 4. Sea-wall N. side of Wexford Harbour.

Elymus arenarius L. 4. In several places both on the N. and S. sides of Wexford Harbour. I cannot see any good reason to doubt that it is native here.

Lastræa æmula Brackenbridge. 4. Roadside near Wexford.

Chara connivens Braun. 4. N. of Wexford Harbour, in the lake or lagoon mentioned above. An addition to the Irish list. With

it grew *C. aspera* Willd. var. *subinermis* Kuetz., *C. canescens* Loisel. (only known before in Ireland from Mr. Scully's Co. Kerry station), and *Tolypella glomerata* Leonh.—"a form approaching *T. nidifica*" (Groves *in litt.*). I believe that this sheet of water requires a more systematic search; the day of my visit was dull and gusty, and the only available drag was an umbrella, as I had not expected to come across aquatic plants. *Chara vulgaris* L. var. *papillata* Wallr. is plentiful in marsh-ditches a little way north of the lake.

DECADES PLANTARUM NOVARUM AUSTRO-AFRICANARUM.

AUCTORE R. SCHLECHTER.

DECAS II.

11. **Muraltia Dodii**, sp. n. Pumila e basi valde ramosa, c. 10 cm. alta; ramulis erectis vel adscendentibus, villosis, demum glabrescentibus, dense foliatis; foliis fasciculatis, lineari-lanceolatis pungenti-mucronatis, dorso rotundatis subvilloso-ciliatis, demum subglabrescentibus, 0·6–1 cm. longis; floribus sessilibus singulis, illis *M. tenuifoliæ* DC. similibus; calycis segmentis subæqualibus ovatis acutis vel breviter acuminatis, glabris, c. 0·2 cm. longis; floribus pallide roseis, carina sanguinea, petalis liberis erectis e basi lineari connata intus villosa, dimidio superiore subito in laminam oblique cochlearem obtusam dilatatis, vix 0·4 cm. excedentibus; carina 0·4 cm. longa, ungue lineari, lamina cucullata obtusa intus glabra, appendicibus petaloideis e basi cuneata obcordatis, c. 0·2 cm. longis; capsula suborbiculari obtusissima ecornuta, pilosula; seminibus oblique ovoideis, breviter hispidulis.

In regione austro-occidentali: in colle arenosa prope Simonstown, 4 Apr. 1896, *Capt. Wolley Dod*, No. 941.

An ally to *M. ciliaris* DC. and *M. decipiens* Schltr.,* differing from the latter by the want of the slender horns on the capsule; from the former by the petals and the carina. The flowers are white or pale pink, with a purplish carina. Only a single specimen was found.

12. **Psammotropha frigida**, sp. n. Exigua, depressa, vix 5 cm. diametro, e basi ramosissima, glaberrima; ramis filiformibus, abbreviatis, dense foliatis; foliis anguste oblongis basin versus vix angustatis mucronulatis, ad apices ramulorum dense fasciculatis, 0·2–0·3 cm. longis; pedunculis 2–3 ex apice fasciculorum, filiformibus, 0·5–1 cm. longis, rigidiusculis, floribus in umbellis 1–3 sessilibus ad internodia, pedicellis filiformibus perigonio haud æquilongis, bracteolis minutis linearibus pedicellis vix æquilongis; perigonii segmentis oblongis obtusis anguste membranaceo-marginatis, 0·2 cm. haud æquantibus; staminibus erectis, quam segmentis

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* In *Engl. Jahrbüch*, ined.

paulo brevioribus, filamentis basi in annulum connatis apicibus liberis filiformi-angustatis, antheris oblongis; stylo filiformi, brachiis 5 (?) filiformibus, apices antherarum vix excedentibus; ovario glabro subgloboso obscure 5-angulato; capsula perigonio æquilonga 5-valvata; seminibus brunneis oblique ovoideo-oblongis.

In regione austro-occidentali: in rupibus humidis in cacumine montis Matroosberg, alt. c. 7000 ped., Dec. 1895, *R. Marloth*, No. 2230.

P. frigida is nearest allied to the eastern *P. androsacea* Fenzl, a plant with much stronger growth, different leaves, and several differences in the flowers, especially the stamens. There is only one species as yet known from the south-western region, *P. quadrangularis* Fenzl, which is at once distinguished by habit and leaves.

13. **Euryops Evansii**, sp. n. Frutex erectus, ramosissimus, 4–5-pedalis, ramulis teretibus, perdense foliatis, glabris; foliis erecto-patentibus, glaberrimis lineari-lanceolatis, vel lineari-oblongis, basi apiceque attenuatis, margine integris apice breviter trifidis, glaucis, dorso uninerviis, textura pro genere tenuiora, 2–5 cm. longis; capitulis ex axillis foliorum ad apices ramulorum subumbellatis, illis *E. pectinatæ* æquimagnis, pedicellis filiformibus glabris, folia longitudine æquantibus vel paulo brevioribus; involucro glaberrimo, foliis 8–10 dimidio inferiore connatis, apicibus liberis lanceolatis acutis, c. 0·7 cm. longis; floribus radii ligulatis apice obtusis, 0·5–0·7 cm. longis, acheniis immaturis glabris cylindricis, pappi setis scabridis; floribus disci tubulosis dimidio inferiore contractis, involucrum vix excedentibus, acheniis glabris; receptaculo semigloboso.

In regione austro-orientali: juxta rivulos ad fontes fluminis Polela, in montibus Drakensbergen, alt. 6000–7000 ped., Febr. 1876, *M. S. Evans*, No. 626.

At once distinguished from all its congeners by the shape of the glaucous leaves. Unfortunately there were no ripe achenes in the specimens sent, but in the young state I do not perceive any pubescence. The pappus is very brittle and rough. The receptacle is hemispherical and deeply honeycombed.

14. **Berkheya Evansii**, sp. n. Pygmæa, compacta, erecta, simplex, 8–15 cm. alta; foliis radicalibus rosulatis 3–5, circuitu subspathulato-ellipticis subacutis vel obtusis, subtus tenuiter canescentibus, margine more *B. setiferæ* DC. setis rigidis spinescenti-ciliatis superne setis brevibus dense squamulosis, basin versus in petiolum perbrevem attenuatis, 3·5–4·5 cm. longis, supra medium 1·8–3 cm. latis; foliis caulinis, 1–2 ad basin caulis radicalibus similibus autem minoribus; caule subnudo tomento cano obtecto setis rigidis patentibus patulisve copiose interjectis (in speciminis visis), apice bicapitato, foliolis bracteæformibus 1–2 ad bases capitulorum; involucri foliolis linearibus vel lineari-lanceolatis, extus tenuiter canescentibus spinescenti-ciliatis, flores disci superantibus; floribus radii 14–16 erecto-patentibus ligulatis apice tridentatis, 1–1·2 cm. longis, medio fere 0·2 cm. latis, basin versus margine minute ciliatis; floribus disci tubulosis, dimidio inferiore contractis hispido-ciliatis, apice alte incisis, lobis acutis, involucrum haud

excedentibus; acheniis immaturis oblongo-cylindricis, sericeis, pappi squamis lanceolatis acuminatissimis, sublaceratis.

In regione austro-orientali: in collibus lapidosis ad fontes fluminis Polela, in montis Drakensbergen, alt. 6000–7000 ped., Febr. 1896, *M. S. Evans*, No. 611.

A species of the section *Trichocoma*, allied to *B. setifera* DC., but well distinguished by its habit, leaves, inflorescence, and smaller heads.

15. **Convolvulus transvaalensis,** sp. n. Perennis, e basi ramosus; ramis filiformibus elongatis, decumbentibus, villosis, satis dense foliatis; foliis erectis breviter petiolatis circuitu linearibus vel lineari-lanceolatis, acutis, basi auriculato-sagittatis margine plus minus undulato-dentatis, utrinque pilis brunneo-cinerascentibus tomentosis, subtus reticulato-venosis, superne subrugosis, 3–5 cm. longis, medio fere 0·5–1 cm. latis, petiolo tomentoso 0·3–0·4 cm. longo; floribus singulis niveis graciliter pedunculatis, pedunculo filiformi erecto nunc folio æquilongo, nunc paulo breviore, tomentoso, supra medium bracteolis 2 oppositis erectis, anguste linearibus tomentosis, calycis basin attingentibus, ornato; calyce quam corolla duplo breviore, foliolis erectis tomentosis inæquilongis, 3 exterioribus ovato-lanceolatis acuminatis, interioribus 2 paulo minoribus angustioribusque; corolla c. 2·5 cm. longa, extus lineis 5 e basi usque ad apicem acutam loborum pilosis ornata, cæterum glaberrima, apicibus loborum brevissimis acutis; staminibus quam corolla duplo brevioribus, filamentis dimidio inferiore adnatis, filiformibus glabris, apice plus quam tertia parte bibrachiato, brachiis suberectis filiformibus; antheris linearibus; stylo staminibus æquilongo filiformi glabro, ovario glabro.

In regione austro-orientali: in collibus graminosis prope Barberton (Transvaaliæ), alt. c. 3000 ped., Aug., Sept. 1889, *E. E. Galpin*, No. 430.

Nearly allied to *C. natalensis* Bernh., but with different foliage and inflorescence.

16. **Chænostoma macrosiphon,** sp. n. Suffrutex debilis, erectus, ramosus; ramulis erectis teretibus glabris; foliis oppositis linearibus vel lineari-subspathulatis acutis, tenuissime puberulis, basi nunc in petiolum brevissimum attenuatis, 0·8–2·2 cm. longis, internodiis nunc æquilongis nunc brevioribus; floribus axillaribus singulis, graciliter pedicellatis, pedicellis suberectis filiformibus, tenuissime puberulis, folia excedentibus; calycis segmentis subæquilongis lineari-setaceis subinconspicue puberulis, ad medium usque in tubum connatis 0·9 cm. longis; corolla in genere longissima, extus tenuiter puberula, tubo elongato cylindrico stricto; fauces versus paulo dilatato, 2·3 cm. longo, segmentis rotundatis obtusis, integris, vix 0·3 cm. longis; stylo filiformi, tubo æquilongo, glabro, antheras 2 longiores paulo superante; capsula ovoideo-oblonga glabra, calyci æquilonga.

In regione austro-orientali: in saxosis summi montis "Andriesberg," prope Bailey, alt. c. 6400 ped., Febr. 1896, *E. E. Galpin*, No. 2004.

Well distinguished from all its congeners by the extremely long corolla-tube. In other respects, especially in general appearance, it seems to be allied to *C. linifolium* Bth. from the south-western region. Mr. Galpin gives the colour of the flowers as "mauve."

17. **Selago albanensis,** sp. n. Fruticulus habitu fere *S. fruticosæ* L.; ramis erectis vel erecto-patentibus glabris, cortice demum ebrunnescentibus, dense foliatis; foliis erecto-patentibus linearibus vel lineari-lanceolatis acutis, subplanis, utrinque glabris, 0·5–1·2 cm. longis, medio c. 0·1–0·2 cm. latis; floribus (fide collectoris) luride lilacinis in spica subdensa terminali, cylindrica (omnino more *S. fruticosæ*); bracteis erecto-patentibus linearibus vel lineari-lanceolatis acutis, glabris, basin versus tenuiter ciliatis, nunc flores æquantibus, nunc tubo æquilongis; calyce tripartito, segmentis 2 lateralibus, lanceolatis acuminatis, margine ciliatis, segmento intermedio ciliato subduplo majoribus vix 0·3 cm. excedentibus; corollæ tubo glabro, e basi subcylindrica, apicem versus paulo dilatata, 0·5–0·6 cm. longo, ore obliquo, segmentis subæqualibus, oblongis obtusis glabris, c. 0·3 cm. longis; staminibus 2 brevioribus faucibus æquilongis, 2 longioribus fauces excedentibus, filamentis corollæ alte adnatis filiformibus, glabris, antheris basi cordatis marginibus incurvis, submitræformibus; stylo filiformi glabro, stamina superiora paulo superante; ovario glabro, ovoideo-oblongo.

In regione austro-orientali: in graminosis prope Port Alfred, alt. c. 200 ped., Nov. 1895, *E. E. Galpin*, No. 3022.

Nearest allied to *S. Zeyheri* Choisy, but differing in its leaves not turning black in drying, and much more virgate branches, besides other characters mentioned in the description. It seems to be rare, and is only known to me from Mr. Galpin's collection.

18. **Lachnæa Marlothii,** sp. n. Fruticulus humilis e basi ramosus; ramis erecto-patentibus teretibus, glabris, dense foliatis; foliis oppositis erectis linearibus acutis, semiteretis vel potius dorso obtuse carinatis, glabris, 0·3–0·5 cm. longis; floribus in genere inter minores, niveis, in capitulum terminalem semiglobosum pauciflorum aggregatis; involucri foliis ovatis obtusis concavis, margine membranescentibus dense villoso-ciliatis, floribus brevioribus; perigonio extus dense strigoso, tubo perbrevi, 0·1 cm. longo, segmentis ovatis acutis, erecto-patentibus, subæqualibus, vix 0·3 cm. longis, intus glabris, faucibus intus dense setis niveis sericeis barbato; staminibus biseriatis, 4 longioribus, 4 duplo brevioribus, filamentis glabris; coronæ squamis ad fauces 8 minutis, spathulatis obtusis glabris, stylo erecto subulato, coronæ squamas paulo excedente, stigmate amplo subgloboso-capitato; ovario oblongo tenuissime puberulo, receptaculo subobsoleto, dense pilis flexuosis villoso.

In regione austro-occidentali: in clivis graminosis montis Matroosberg, alt. 6000–6500 ped., Dec. 1895, *R. Marloth*, No. 2218; No. 2276.

Differs from *L. penicillata* Meisn. and *L. funicaulis* Schinz by its larger and more hemispherical heads, and by the much shorter corolla-tube. The flowers are pure white.

19. **Viscum subserratum,** sp. n. Ramis primum tetragonis, demum subteretibus distanter foliatis, glaberrimis; foliis spathulato-obovatis obtusis, basi in petiolum brevem attenuatis, margine serrulatis, crassis, 3–5-nerviis (folia Cinnamomi in mentem revocantibus) petiolo incluso 2·3–4 cm. longis, supra medium 1·5–2·5 cm. latis; floribus in fasciculis axillaribus subextra-axillaribusve paucifloris, pedicellis subdivaricatis apice bibracteatis vel potius bisquamatis; fructibus ovoideo-oblongis, coccineis (?) dense verrucosis apice stylo brevi persistente coronatis, 0·5–0·8 cm. longis, medio fere vix 0·5 cm. diametientibus.

In regione austro-orientali: in *Cussoniæ* specie in collibus prope Barberton (Transvaaliæ), alt. c. 3500 ped., Sept. 1889, *E. E. Galpin*, No. 452.

Of this I have unfortunately only fruiting specimens, but as the fruits are of the most importance in the genus, I have ventured to describe the plant. Amongst the South African species *V. subserratum* should rank next to *V. obscurum* Thbg. and *V. obovatum* Harv., from both of which it is well distinguished by its serrulate leaves and the tuberculated berries. *V. verrucosum* Harv., the only other species with tuberculated berries, is a leafless plant. I am not quite sure about the colour of the berries in our plant, but, judging from the dried specimens, it seems to have been red.

20. **Gladiolus oreocharis,** sp. n. Gracilis, erectus, habitu *G. brevifolii* Jacq.; cormo ignoto; caule pedali stricto, glaberrimo, tereti; foliis c. 3, quorum infimum lineari-setaceum acutissimum, rigidum, cauli subæquilongum, superiora 2 abbreviata; spica pauciflora secunda; spathæ valvi exteriore oblongo obtuso, apice submembranaceo, brunneo-virescente, valvi interiore breviore; perianthii tubo subrecto, pro magnitudine floris conspicuo, apicem versus paulo dilatato, segmentis oblongis obtusiusculis suberectis, supremo quam inferioribus paulo majore; staminibus quam corollæ segmentis paulo brevioribus; stylo corollæ æquilongo, brachiis oblongo-falcatis, brevibus.

In regione austro-occidentali: in saxosis humidis, in monte "Matroosberg," alt. c. 6000 ped., Dec. 1895, *R. Marloth*, No. 2265.

This species should, I think, be placed next to *G. gracilis* Jacq., which it resembles in general appearance, but from which it differs by its long corolla-tube with subequal segments, and by the smaller flowers with larger obtuse spathe-valves. Unfortunately the only specimen which I received from the collector is destitute of a corm. The flowers in a living state are evidently purplish.

TWO NEW BRAMBLES FROM IRELAND.

By the Rev. W. Moyle Rogers, F.L.S.

Rubus hesperius, sp. n. (or var. n.). Stem bluntly angular with deeply striate faces, glabrous or with a few scattered very short hairs. *Prickles* short with long compressed bases, falcate or declining, *thickly but unequally scattered and only partially confined to* *the angles*, always *small* and not unfrequently passing into acicles on the faces. *Leaves* mostly 5-nate-pedate, yellowish in exposure, *remarkably broad* owing to the exceptionally large intermediate leaflets and the short stalk of the terminal one, with petiole about one-third shorter than terminal leaflet and only slightly exceeding the basal; stipules very narrow, ciliate. *Leaflets strongly imbricate as a rule*, plicate, rugose, shining and strigose above, paler and usually glabrous beneath except on midrib and nerves, which have a few short shining hairs; *terminal* about four times longer than its stalk, *very broadly ovate* with acuminate point and emarginate or subcordate base; *intermediate nearly as large and similar*, though of course with narrower base; basal oval, small, very shortly stalked; all coarsely biserrate.

Panicle very lax below with long strongly ascending racemose or subracemose branches and 1–3-flowered patent or patent-erect ones in the ultra-axillary part; *rachis* rather flexuose, felted above and *clothed throughout with dense fine hair, numerous small acicular prickles, and a good many sunken and subsessile glands;* leaves 3-nate below with broad leaflets, the floral ones (1 to 3) simple and broadly ovate, or 3-fid; bracts many, usually 3-fid, *peduncles and pedicels rather long, grey-felted. Sepals* grey-green, white-margined in bud, clothed like the rachis but with more numerous sunken glands and (usually) acicles, reflexed after the petals fall but *soon ascending*, red at base within. Petals white, rather small with long claws, distant. Stamens white, erect, not greatly exceeding green styles and soon closing in on them. Carpels apparently glabrous.

This is the bramble referred to by Messrs. Marshall and Shoolbred, its discoverers, in p. 253 of the present volume of this Journal, as "a striking plant found at Oughterard, Maam, Clonbur, and Cong." It was at first thought by me to be a glabrous form of *R. hirtifolius* Muell. & Wirtg., while Dr. Focke felt inclined rather to associate it with *R. Salteri* Bab. Early in last summer Mr. Marshall was able to repeat and extend his previous exploration of the district, and he then came to the conclusion that this is one of the most general and constant bramble forms occurring throughout the parts of E. Galway and W. Mayo which lie to the north and the north-east of Lough Corrib. The above description has been made from a large series of specimens that he kindly sent me, fresh and dried, from several localities, in 1895 and 1896. I agree with him in thinking it a very distinct form, which probably does not occur in Great Britain, though it may prevail widely in the west of Ireland. If its nearest ally with us is *R. Salteri*, it yet differs considerably from that species as represented by the only specimens I have seen (from Apse Castle Wood and Aconbury). In its leaves and stem, and its *silvaticus*-like armature especially, it is conspicuously different. *R. Salteri* itself, however, is still among our most obscure and ill-defined species, and it may yet prove to be nothing more than a local form. It is therefore hardly possible to say at present what other brambles may be rightly included under it as varieties or subspecies.

R. iricus, sp. n. (or var. n.). *Stem stout*, angular, deeply striate or subsulcate, fuscous in exposure, with many fine white hairs stellate and single. Prickles many, rather unequal, almost confined to angles, patent or slightly declining, with large triangular base. *Leaves large, coriaceous*, chiefly 5-nate-pedate, with petiole nearly equalling terminal leaflet, and very long ciliate stipules. *Leaflets* hardly imbricate, *subrugose*, somewhat hairy and dull deep green above, with shining white hairs on the veins beneath and usually felted when young; *terminal ovate or slightly obovate* with *gradually acuminate point* and emarginate base, quite four times longer than its stalk; intermediate large and nearly similar; *basal* broad, *very shortly stalked;* all coarsely and irregularly toothed.

Panicle most remarkably stout and broad, with distant axillary often composite branches below and a broadly cylindrical-truncate ultra-axillary top, many of the upper branches being cymose-umbellate, with 1–2-flowered peduncles intermixed. *Rachis and long upper side branches* nearly straight, *clothed with dense yellowish-grey villous hairs* and felt extending to the sepals, with small slender prickles in the ultra-axillary part and strong unequal ones below. *Leaves very large*, 5-nate and 3-nate below, with an occasional simple or 3-fid one above; all thick and mostly felted beneath. Bracts many, large, usually 3-fid and more or less gland-ciliate. Sepals ashy-felted inside and out, reddening at base within and yellowish where the long hairs are crowded at the base without, with long acuminate point, strongly reflexed at first (as in all my specimens). Petals large, broadly obovate, clawed, bright pink. Stamens bright pink, nearly erect, exceeding styles. Fruit not seen.

First observed in 1895 with *R. hesperius* in Galway and Mayo by Messrs. Marshall and Shoolbred, and referred to by them as "allied to *R. mollissimus* and *R. Schlechtendalii*" in p. 253 of this year's Journal. When Mr. Marshall revisited the district last summer he sent me excellent and abundant fresh specimens, which I was able to examine and make full notes on before I pressed them. He found the plant in great quantity, especially about Maam, but also at Oughterard, Cong and Clonbur, north of Lough Corrib, and near Lough Mask, to the south and south-east. Most striking and well-marked as this splendid plant is, and always recognizable, I should suppose, at a glance, I have to own to some difficulty in keeping it specifically distinct from my *R. mollissimus;* the N. Devon and Carnarvon forms of which especially approach it closely. It is, however, not only very much stouter and more densely hairy than *R. mollissimus*, with brighter pink petals and stamens; but the leaflets also are utterly different in texture and considerably narrower, gradually acuminate and emarginate-based (instead of roundish-obovate-cuspidate and entire-based); while the prickles below the ultra-axillary top are very strong instead of being exceptionally weak, and the stamens seem relatively short and more erect.

It is to be hoped that Irish botanists will before long be able to tell us more of the distribution of these two new brambles from Ireland, for the discovery of which we are indebted to Messrs. Marshall and Shoolbred.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

William A. Clarke, F.L.S.

(Concluded from p. 476.)

Additions and Corrections.

The following additions and corrections have been noted while this list has been passing through the press. A reference to the volume and page of the Journal precedes each.

PAGE

1892, 24. **Ranunculus tripartitus.** For "**1844**" read "**1848**"; and for "L. Cat. ed. i." read "L. Cat. ed. ii." But see Journ. Bot. 1871, 67, and 1878, 38, as to the identity of the plant.

,, 24. **R. sceleratus.** Add "Under Ranunculus . . . Secundum genus" and "Ranunculus rotundifolius, fortè Apium risus."—Johns. Eric. 12 (1629).

,, 49. **Actæa spicata.** Gerard no doubt referred to "Sir William Bowes," of Barnard Castle, Durham.

,, 50. **Fumaria densiflora.** For "**1843**" read "**1840**," and put "in or before 1839" in [ ].

,, 50. **F. Vaillantii.** For "**1843**" read "**1840**."

,, 84. **Barbarea stricta.** For "vol. 72" read "Volh. 72."

,, 84. **Arabis perfoliata.** For "(1789)" read "(1783)."

,, 85. **Cardamine impatiens.** This is recorded a year earlier by Johnson in Ger. em. 261 (1633).

,, 85. **Cochlearia Armoracia.** For "**1648**" read "**1548**."

,, 150. **Viola palustris.** An earlier record is "*Viola rubra striata Eboracensis.* Master Stonehouse a reverend Minister of Darfield in Yorkeshiere assured me he found a kind of wild Violet neare unto his habitation, whose leaves were rounder and thinner then of others, and the flowers reddish with sadder veines therein." —Park. Theatr. 755 (1640).

,, 152. **Dianthus cæsius.** For "(1794)" read "(1792)."

,, 214. For "**Cerastium tetrandum**" read "**C. tetrandrum**," and for "(1793)" read "(c. 1795)."

,, 214. **C. pumilum.** For "Curt. Fl. Lond. ii. 92 (1778)" read "Curt. Fl. Lond. vi. 30 (c. 1795)."

,, 214. **C. viscosum.** For "**1667**" read "**1666**" here and in other places where the 2nd ed. of Merrett's 'Pinax' is quoted, it being only a reprint of the first.

,, 214. **Cerastium arcticum** Lange. Mr. Beeby informs me that this is really equivalent to *C. latifolium* of Smith, Eng. Flora, and so may perhaps be traced back to Ray's time.

,, 215. After **Stellaria media** insert "*S. umbrosa* Opitz appeared as var. of *S. media* in Edinburgh Cat. of Brit. Pl. ed. 2 (1841)."

1892, 215. **Arenaria sulcata.** Read "Sm. Engl. Fl. iv. 267."

,, 276. **Geranium pratense.** An earlier record is "pratis . . . . Angliæ lasciuit floribus cæruleis," &c.—Lob. Adv. 297 (1570).

,, 277. After **G. columbinum** insert:—

G. lucidum L. Sp. Pl. 682 (1753). **1633.** "Mr. Goodyer found it growing plentifully on the bankes of the highway leading from Gilford towards London, neere unto the townes end."—Ger. em. 938.

,, 277. After **Erodium cicutarium** insert:—

E. moschatum L'Hérit. in Ait. Hort. Kew. ed. 1, ii. 414 (1789). **1670.** "In Craven-common, and near Bristow, on a little Green you pass over going thence to S. Vincents Rock."—Ray, Cat. 132.

,, 277. **Erodium maritimum.** Add "But Petiver in Phil. Trans. xxvii. 379, says, 'the first discovery of this Plant is owing to Dr. Morison . . . who found it in Stoney places about Chadder in Somersetshire.'—See Morison, Hist. Ox. part ii. sect. 5, p. 512 (1680)."

,, 278. **Ulex europæus.** Add "But in Turner's Herbal, Part i. D j (1551), there is a reference to 'a fur: whyche in manye places of Englande is . . . called a Whyne,' doubtless meaning this."

,, 278. **Trigonella purpurascens.** For "Ray Syn, i, 246" read "Ray Syn. i. 136."

,, 278. **Medicago minima.** For "(1709)" read "(1789)."

,, 306. **Oxytropis uralensis.** Mr. Symers Macvicar points out that this appears to have been discovered by Dr. John Walker near Loch Leven in 1761. See his Essays on Nat. History and Rural Economy, 380 (1808).

,, 342. After **Lathyrus macrorrhizus** insert:—

L. niger Wimm. Fl. Schles. 166 (1832). **1821.** "Found by Thos. Drummond in the Den of Airly, 12 miles west of Forfar."—Hook. Fl. Scot. ii. 267 (Orobus niger).

,, 343. **Potentilla Fragariastrum.** Substitute "**1576.** 'Rupibus et cautibus Cornubiæ ad ædes generosi viri D. Muli frequentissima.'—Lob. Obs. 396."

,, 344. **P. maculata.** Substitute "**1762.** 'Prope Giggleswick in comitatu Eboracensi.'—Huds. ed. i. 197 (as *P. verna.*)"

,, 345. **Rosa hibernica.** Read "Stewart & Corry in Fl. of N.E. Ireland, say 1795."

1893, 86. **Saxifraga rivularis.** Substitute "**1792.** 'In monte Ben Nevis Scotiæ hanc plantam primus in Britanniâ invenit anno 1790, D. Robertus Townson.' — J. E. Smith in Linn. Fl. Lappon. ed. 2, 143."

,, 86. **Parnassia palustris.** Substitute "**1570.** 'In pratis et udis pascuis Angliæ ad Oxoniam.'—Lob. Adv. 263."

,, 87. **Drosera anglica.** For "1953" read "1053."

1893, 88. After **Epilobium obscurum** insert "*E. Lamyi* F. Schultz was first referred to, as far as I am aware, in Phytol. o. s. iv. 933 (1853)."

,, 150. **Physospermum.** Add "Stephens, who sent this to Buddle, died in 1679."

,, 244. **Peucedanum palustre.** For "(1784)" read "(1794)."

,, 275. **Senecio palustris.** For "Davey" read "Darcy."

,, 278. **Lactuca Scariola.** For "**1568**" read "**1562.**"

,, 279. **Wahlenbergia.** After "Ic. Bot. v. 47" insert "(1827)."

1894, 13. **Centunculus.** Mr. Druce informs me that the "Chamælinum stellatum Park. . . . Beyond Redding" of How Phyt. (1650) was most probably this plant.

,, 17. After **Verbascum virgatum** insert "**V. Blattaria** L. Sp. Pl. 178 (1753). **1629.** 'Blattaria vulgaris flo. luteo.'—Johns. Kent, 10."

,, 151. **Nepeta Glechoma.** Read "Benth. Lab. 485 (1832)."

,, 244. **Atriplex littoralis.** After "riguis" insert "pratis."

,, 307. **Euphorbia Peplis.** For "Intu" read "Inter."

,, 341. **Salix lapponum L.** It appears from the 'Essays on Natural History' of Dr. John Walker that this was first observed by him in the parish of Moffat, in July, 1762.

1895, 16. **Cephalanthera ensifolia.** Substitute "**1666.** 'Helleborine angustifol. fl. albo oblongo. In Helkwood in Yorkshire, not far from Ingleborough.'—Merrett, 61."

,, 16. **Epipactis atrorubens.** The date should be "**1677,**" and the reference "Ray Cat. ed. 2, 157, 8."

,, 18. **Leucojum æstivum.** For "**c. 1785**" read "**c. 1788.**"

1896, 228. **Carex Boenninghausiana.** For "**1643**" read "**1843.**"

,, 275. **C. ventricosa.** Substitute "**C. depauperata** Curtis Cat. ex With. Bot. Arr. ed. 2, 1049 (1787). *C. ventricosa* Curtis, Fl. Lond. vi. 68 (c. 1790). 'Discovered by Mr. Curt. [Curtis], Charlton-wood, Kent, Mr. Woodward.' But see Curtis, *l. c.* and Linn. Soc. Trans. ii. 181."

,, 472. **Cynosurus cristatus.** Substitute "**1605.** 'Pratis Londinensis agri juxta Hackneum.'—Lob. Adv. pars alt. 465."

As a brief summary of some interesting facts deducible from the list now concluded, it appears that Turner's works (1538–1568) contain references to at least 230 species of British flowering plants. Lobel adds 67, and Gerard 181; thus we find that about 480 species have been known for 300 years.* In Johnson's works (1629–1641) we get first records of 160 more. Parkinson (1640) adds 27, many of them very interesting—e. g. *Arbutus*, the first Irish record, and the strangely late first notice of *Pinus sylvestris*. In How's Phytologia we get 16 new plants; Merret adds 40; Plukenet 1 (*Subularia*);

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* Bauhin (1620) gives us our first Scotch plant (*Trientalis*).

and Morrison 2 (*Salvia pratensis* and *Carex vesicaria*). This gives a total of 725 species known before Ray's time. Then Ray adds no less than 205 new species to the list, making a total of 930. As the list contains altogether 1440 species, we have 510 discovered since Ray's time, that is roughly within the last 200 years.

SHORT NOTES.

GERANIUM MOLLE, var. (p. 477).—Mr. Dunn quotes *G. villosum* Tenore for this. Neilreich (*Nachträge zu Maly's En. Pl. Aust.* 282) says that the reference is not correct, but should be *G. villosum* Reich. *Ic.* xv. f. 4880 (non Ten.), and that *G. villosum* Tenore (*Fl. Nap.* iv. t. 166) is a synonym of *G. pyrenaicum* L. I ask for information; so many unauthorized names have crept into our Floras, that it is best to sift them at once. Nyman makes a subspecies of *G. villosum* Ten. under *pyrenaicum*, and puts a ! after Tenore's name (from which it would seem that Neilreich was right); and in his Supplement, under *G. molle*, has "*G. villosum* Reichb. (non Ten.)."—ARTHUR BENNETT.

HYPOCHŒRIS GLABRA L. (p. 476). — In Mr. Dunn's interesting note on this plant there are one or two points that I fail to understand. He says his var. *nana* has "a sessile pappus in two rows, destitute of woolly hairs"; if really so, how can it belong to the genus? I should call the plumose pappus of *H. glabra* rather silky than woolly. I possess a small form of this from Santon Warren, between Thetford and Brandon, *Norfolk*, but that has the ordinary plumose pappus. In Yorkshire specimens of the var. *erostris*, however, the hairs are evidently deciduous, sometimes from above to below, in others from below upwards. Of course we know the shorter outer circle of the hairs of the pappus are not plumose, only denticulated. I do not find in ordinary typical specimens of *H. glabra* L. that the hairs are not continued from the apex to the base of the pappus (unless from causes of growth) or crown of the fruit. In many dozens of specimens examined in 1886 on Mitcham Common, Surrey, the plumose hairs extended from the apex to base of the pappus. Cosson and Germain (*Flore des Environs de Paris*, 427, 1845) divide the species as under:—

α. *vulgaris*. Achenes of two sorts, those of the circumference destitute of a beak, those of the centre attenuated into a long beak.

β. *erostris* (= *H. arachnoidea* Poir. *Dict.* 5, 572). Achenes all destitute of a beak.

γ. *rostrata* (= *H. Balbisii* Loisl. not. 124). Achenes all attenuated into a long beak. This was called by Godron (*Fl. Lorraine*, ii. 58, 1843) *H. glabra* β. *Loiseleuriana*. Sonder (*Fl. Hamburgh*, 429, 1851) gives a "β. *decipiens*, achæniis omnibus rostratis, rostro achænium æquante, *H. Balbisii* Koch, non Loisl." I have not seen this. There is also, according to Archangeli, an earlier name for *H. Balbisii* (*Comp. Fl. It.* 414, 1882). He calls it γ. *minima* Cyr. = *H. minima* Cyrillo (*Pl. Rar. Neap.* Fasc. i. 29, t. x. (1788)). Nyman, I see, says, "*H. minima* Balb., non Cyr." I possess specimens of the var. *erostris* from Rillington, E. Yorkshire, gathered by Mr. G. Webster in 1889 and 1890. According to Mr. Dunn's divisions, some of these specimens would represent two varieties on one plant. Babington (*Man. Brit. Bot.* ed. 1, 176, 1843) named *H. Balbisii* "*H. glabra* L. var. *Balbisii* Bab." His preface is dated May 1st; will this take precedence of Godron's name?—ARTHUR BENNETT.

VARIETIES OF HYPOCHŒRIS GLABRA L. (p. 476).—Mr. Dunn seems to have brought to light a new variety of this species, in what he proposes to call var. *nana*, since in the branched rootstock and the fruits all truncate, bearing pappus destitute of woolly hairs, there are two if not three good distinguishing features. The plant should be cultivated side by side with the usual form of *H. glabra* (one would be glad to know which of the names given under 2*a* fits our usual plant) on light unenriched soil, to determine which of the seven or eight characters given are permanent distinguishing features. I have gathered specimens that answer to the description at Mudeford, S. Hants, and also near Thetford; but the Thetford specimens form part of a mixed series gathered partly at Croxton (Norfolk) and partly on the way to Elveden (Suffolk), some of which are small *H. glabra* L.—E. F. LINTON.

MONTGOMERYSHIRE RECORDS (p. 172). — From my list of unrecorded plants collected by Miss Jones in 1895, the following was inadvertently omitted:—*Ballota nigra* L. Chirbury Road, Montgomery.—WILLIAM WHITWELL.

MIDDLESEX PLANTS. — While recently botanizing in the neighbourhood of Staines, it was my good fortune to find *Stachys annua*, *Erythræa pulchella*, and *Echinospermum Lappula*, all of which I believe to be new to Middlesex, as well as *Rumex limosus* profusely distributed over a considerable space of unfrequented marshy land; Mr. Hanbury kindly informs me that my naming of these is correct. —E. F. SHEPHERD.

NOTICES OF BOOKS.

Journal of the Rt. Hon. Sir Joseph Banks, Bart., &c., during Capt. Cook's First Voyage in H.M.S. Endeavour in 1768–1771. Edited by Sir JOSEPH D. HOOKER. With Portraits and Charts. (London: Macmillan. 1896.) Pp. li, 466. 17s. net.

THIS is a remarkable instance of the materials for a fascinating book having lain *perdu* for more than a century, and of their eventual recovery and publication. The romantic story of the adventures of the original MS., culminating in its sale in 1886 by Lord Brabourne, who claimed it as a descendant of Lady Banks, to an autograph dealer for £7 2s. 6d.; its loss, the utilization for the present work of a copy made for Dawson Turner and secured by Mr. Carruthers for the Department of Botany,—all this story is told by Sir Joseph Hooker (and by Mr. Carruthers in a letter to him) in the Preface. Sir Joseph had been on a visit to his grandfather in 1833 when it was being copied, and we owe this volume to the journal having fascinated him as a boy. Well it might; apart from natural history the story is exciting and novel enough to fascinate boys of all ages. Admiral Wharton has given us Cook's journal of the same momentous voyage, which has had such far-reaching imperial consequences in Australia and New Zealand. It is not a little odd to read the passages dealing with these countries, and immediately afterwards the record of the landing at a part of New Guinea scarcely known to this day. The naturalist will instinctively place this volume on his shelves in the company of the *Voyage of the Beagle*, Mr. Wallace's *Amazons* and *Malay Archipelago*, and Sir Joseph's own *Himalayan Journals*. I have put these books together not as containing exploits of travel merely, but from the human interest, the brimfulness of natural curiosity they all exhibit, the companionship which is the highest and most inimitable quality of books of travel. Strange that so few travellers, other than naturalists, have ever attained it,—it is indeed the touch of nature, and no inspiration of art such as guides the romance writer to a similar success.

From my knowledge of the MS. journal I can testify—though it were absurd to suppose in this case such testimony to be little better than impertinence—to the admirable editing and selection made by Sir Joseph Hooker; but I do it for the better reason that his son, Mr. Reginald Hooker, deserves the thanks of all who will enjoy this volume, for the assistance he rendered in the work, and in drawing up the admirable notices of the earlier voyagers and others referred to by Banks. Sir Joseph has himself given an interesting account of both Banks and Solander, of whom portraits are published. The majority of naturalists, probably nearly all of them, know little more of Banks than that he was a great patron of science, a more or less gilded personage, who had the genius to judge of men with great success, and that he had much to do with giving us Robert Brown. When they have read his Journal they will know him as a man in whom the fire of natural curiosity glowed, of indomitable courage and unfailing resource, a man whom it was well for science that this country possessed. There are indeed passages in the MS. journal which exhibit Banks as a man of considerable humour, but these it would have been injudicious to publish. Though the sometime Queen of Otaheite has been dead these many years, scandal about her, as about other queens, is better buried. The "young person" herself may read the book, with nothing worse to cause her blushes than the incidental romantic story of how Jean Bary, the servant of Commerson, naturalist to Bougainville's voyage, was discovered by the Tahitians to be a woman who had followed this young botanist to sea "in a sailor's blue array," as Mr. Gilbert describes it in another but mythical and wholesale instance of the same abandonment of feminine principles.

The Journal will prove of immense interest to the anthropologist, who will find in it abundant observation of peoples untouched by civilization,—very shrewd observation, obtained in most cases at first hand, and by the method of living intimately among the races in question, sleeping and eating in their houses with a mixture of perfect confidence and watchfulness. The New Zealand observations are certain to be held to be of particular value.

It is interesting to come upon here, as in so many other voyages, records of the observation of pelagic *Oscillatorieæ*, viz., the "sea-sawdust" seen in Torres Straits, the coast of Brazil, and elsewhere. Banks excellently describes it (considering his instruments): "It was formed by innumerable small atoms, each scarcely half a line in length, yet, when looked at under a microscope, consisting of thirty or forty tubes, each hollow and divided throughout the whole length into many cells by small partitions, like the tubes of *Confervæ*. . . . A Portuguese, who came on board the ship at Rio de Janeiro, told me that at St. Salvador on the coast of Brazil, where the Portuguese have a whale fishery, he had often seen vast quantities of it taken out of the stomachs of whales or grampuses." The immense masses of diatoms (largely formed of *Thalassiosira Nordenskioldii*) found in the Arctic seas are known to sailors as "whale's food," though probably the myriads of copepoda, &c., that accompany these shoals and feed on the diatoms are more sustaining to the whale, if there be anything in the name. We have, as Sir Joseph Hooker first pointed out, the greatest diatom masses of all in the Antarctic Sea, and doubtless they are the basis of the food supply at all events of the animal life of that region.

However, enough has been said to point out the book as one of pleasurable and profitable reading, not only to naturalists and anthropologists, but to cultivated readers in general.

GEORGE MURRAY.

The Student's Handbook of British Mosses. By H. N. DIXON; with Illustrations, and Keys to the Genera and Species, by the Rev. H. G. JAMESON. Eastbourne: V. T. Sumfield. London: John Wheldon. 1896. Pp. xlvi, 520; 60 plates. Price 18s. 6d.

THE authors of this bulky addition to our British Moss library have been at pains to define with precision the share which they have respectively taken in its composition. Hence an appreciative or disappointed public will be able to mete out praise or blame to the proper recipients without fear of a miscarriage of justice. The authors are well known in the bryological world—Mr. Dixon as an extremely keen and energetic moss-collector, and Mr. Jameson as the author of an *Illustrated Guide to British Mosses*, which has an interesting history from the point of view of development. Its original form was a thin pocket-book, privately issued some six or seven years ago, containing a lithographed key to the Mosses. It was too good to be withheld from publication; so in 1891 it was rewritten and printed in this Journal with a plate illustrative of the technical terms employed; and it was also sold as a separate reprint. In 1893 it was again rewritten and published with fifty-nine plates all drawn by the author with the camera lucida (each structure being magnified to a definite scale uniform throughout), and faithfully representing the important diagnostic characters of every species.

This was the *Illustrated Guide* mentioned above. So useful and trustworthy was it found to be, and so practical in its working—with its unique feature that it rendered possible the identification of barren mosses—that it was greatly in demand; and the whole edition was soon exhausted. Once more the scene changes, and we have before us the subject of the present notice. Mr. Jameson's keys and plates no longer stand alone, but, remodelled and redrawn to suit the context, are incorporated in a new handbook written by Mr. Dixon.

Mr. Dixon's work—it should be said at once—is in no sense a mere compilation, but is a genuine description of the plants from his personal knowledge of them in both the living and the dried state; and the descriptions are both careful and harmonious. A welcome feature, which is novel to British Moss literature, but has been employed by some foreign writers, is the italicizing of the most distinctive characters of the genera and species—a thoughtful provision which will save us much time in the identification of specimens. To the generic and specific descriptions are appended notes which will prove eminently helpful to the student in the discrimination of plants that are closely allied or deceptively alike. At the same time these notes may, in so far as they are critical, elicit the approval or disapproval of the advanced worker, according to the views he may entertain of the values of species. And this will apply to the subspecies—another innovation which Mr. Dixon has introduced in order the better to express the conclusions at which he has arrived with regard to the claims the plants possess to qualify as species or less than species. He always clearly states his reasons for changing the rank of a plant, and as a genuine worker he has as much right to put forward his own opinion as anyone else has to maintain an opposite opinion. Moreover, the subspecies are as fully described (and figured by Mr. Jameson) as the species, and merely differ in being indicated by an asterisk instead of a number; hence the introduction of subspecies will in no way diminish the utility of the book to the student for whom it is principally intended, "the primary object of this work being," says Mr. Dixon in his Introduction, "to simplify the determination of our British Mosses for the student, and to make it available, as far as possible, for a beginner."

The system of classification is that of the second edition of Schimper's *Synopsis* (1876), modified, however, in the light of Philibert's researches into the structure and development of the peristome. The Mosses are divided into three subclasses—*Sphagnales*, *Andreæales*, and *Bryales*, the latter being again divided into two groups—*Nematodonteæ* (including three orders—*Tetraphidaceæ*, *Polytrichaceæ*, and *Buxbaumiaceæ*) and *Arthrodonteæ*. The *Arthrodonteæ* fall into two subgroups, of which the one—*Aplolepideæ*—contains five orders (*Dicranaceæ*, *Fissidentaceæ*, *Grimmiaceæ*, *Tortulaceæ*, *Encalyptaceæ*), and the other—*Diplolepideæ*—is further divided into two sections, the first comprising the rest of the acrocarpous orders, and the second all the pleurocarpous. This arrangement is somewhat novel to British folk; but, though they will see that the primary division into *Acrocarpi* and *Pleurocarpi*, to which they have been accustomed, is abandoned, they will yet find the *Pleurocarpi* all together at the end of the list. They must, however, look for the *Grimmiaceæ* earlier in the list, and no longer in the neighbourhood of the *Orthotrichaceæ*. The cleistocarpous forms are distributed and placed in those orders to which they show vegetative affinity. Modern researches into the peristome have led to the interesting speculation that the differentiation of most types of sporogonium must have been completed before the elaboration of the oophyte (or vegetative part) into stem and leaf began. Thus the primeval type of Moss, consisting principally of protonema and fruit, is indicated to us by that curious survival, *Buxbaumia* (*Handbook*, p. 47).

Against the synonymy of the species it must be urged that it is open to objection on the score of excessive brevity in being limited to the original name of the plant, together with the subsequent names adopted by Schimper and Braithwaite—and by Lindberg in the case of the *Pleurocarpi*, on the presumption that Braithwaite will extend the Lindbergian notation to this group. This brief synonymy may perhaps satisfy the beginner. But Mr. Dixon should have borne in mind that his new *Handbook* is the only complete and adequate modern treatment of our Mosses, and as such will replace Wilson's *Bryologia Britannica* (1855), our old standard work with its now archaic nomenclature. Hence he should have arranged for a ready reference from the one book to the other. For, as it is, the inexperienced student will find no direct connecting link between the *Oligotrichum incurvum* and *Cylindrothecium concinnum* of the newer book and the *O. hercynicum* and *C. Montagnei* of the older. Again, the species of *Webera* are only to be collated with the corresponding species of *Bryum* in the "Bryologia" indirectly through the *Pohlia* synonyms which are common to both books. Similarly, in cases of *Ceratodon cylindricus*, *Bryum demissum*, *Isothecium alopecurum*, *Pterogonium filiforme*, *Leskea rufescens* of the "Bryologia," which have to be traced through synonyms to their equivalents in the *Handbook*. The few additions necessary for removing such defects would have increased Mr. Dixon's text to an inappreciable extent, and would have been of great assistance to the old-fashioned Moss-student.

The distribution of the species Mr. Dixon has been constrained to limit to broad generalized statements for two reasons—lack of materials for drawing out a complete list of localities, and lack of space to print it. But he gives the localities of the rarer species.

One new species—*Fontinalis Dixoni* Cardot—makes its *début* in the *Handbook*, and one new subspecies—*F. dolosa* Cardot; and there are six new varieties, to four of which Mr. Dixon is godfather. Attention may be called to the almost simultaneous publication of descriptions of *Fontinalis Dixoni* and *F. dolosa* by Cardot himself in the *Revue Bryologique* (1896, pp. 70 & 68). There *F. dolosa* ranks as a species.

Some changes of generic nomenclature call for remark—the substitution of *Weisia* in an extended sense and *Trichostomum* for *Mollia*, of *Porotrichum* for *Thamnium*, and of *Pleuropus* for *Homalo-*

thecium. But this short statement must suffice for the present; for an adequate consideration of these changes—especially the dismissal of *Mollia*—would lead to a long and intricate discussion of priority which could not be compressed within the limits of this review. Other points to be noted are that *Pogonatum* is made a section of *Polytrichum*, and *Entosthodon* of *Funaria;* that *Scleropodium* and *Hypnum purum* fall into *Brachythecium*, *Rhynchostegium* for the most part into *Eurhynchium*, but *R. depressum* and *R. demissum* into *Plagiothecium;* and that *Hypnum rugosum* is transferred to *Hylocomium.*

Objection should be taken to the names *Oligotrichum incurvum*, already alluded to, and *Heterocladium squarrosulum*, on the ground that the binomials *Oligotrichum hercynicum* and *Heterocladium dimorphum* are older, and must be maintained.

The letterpress has been carefully revised; misprints are remarkably few, and of these one—"*H. chrysopyllum*," tab. lvi, fig. L—is a survival from Mr. Jameson's *Illustrated Guide.* The typography is extremely creditable to the local printer.

To sum up, the book is an excellent and successful piece of work, and may be cordially recommended to moss-students.

A. Gepp.

Catalogue of the Library of the Linnean Society of London. New Edition. Burlington House, W. 8vo, pp. 727. Price 10s.; to Fellows, 5s.

The Linnean Society cannot be accused of undue haste in issuing this new edition of its Library Catalogue. It is thirty years since the former Catalogue was published, and a few supplementary fragments have been printed from time to time. Three years ago a Catalogue of "Periodicals" was printed, of which some copies were distributed; but the Council wisely withdrew this from publication. In some degree this abortive effort was useful, for it led to the whole question of the Catalogue being raised, and to the arrangement which has resulted in the present handsome volume. As a catalogue *pour rire* it was also not unwelcome in these dull days; and as the Fellows seem to have taken no exception to their funds having been wasted, there is no need to say much about it. It will doubtless obtain a place in any future collection of "Literary Curiosities"—a position to which its demerits fully entitle it.

The present Catalogue is a sensibly arranged, and therefore helpful list. Everything is in one alphabet; the cross-references are sufficient to be useful, without being maddening; the typography is good, the binding pleasant to look upon. To country Fellows the book will be a great boon; and it will, we imagine, lead to a great increase in the borrowing of volumes from the Society's Library, now that folk at a distance from town can ascertain what works are at their disposal.

Certain little inconsistencies are always noticeable in books of this kind, and the Linnean Catalogue has less than its share. As an example of what is meant, it may be noted that Mr. J. R. Jackson's Guide to the Kew Museum is duly catalogued under

"Kew—Royal Gardens," with a cross-reference under "Jackson"; whereas Mr. Hemsley's Catalogue of the North Gallery appears only under his name, and is not mentioned under Kew; this is the more remarkable, as to the fourth edition of that work no author's name is attached. "Brown (Robert), of the British Museum," and "Brown (Robert), of Campster," recalls the distinction made by the profane between "Morris of Parnassus" and "Morris of Pen-bryn"; surely the "botanicorum princeps" needed no local distinction? This Journal, with its somewhat confusing list of editors, is correctly entered; but vol. 14 is stated to be in 4to.

The oddest entry, whether as to subject, author, or mode of printing, is one which we reproduce textually:—

"Henry VIII., *King of England*. Assertio Septem Sacramentorum Aduersus Mart Lutheram-Henrico VIII., Angliæ Rege auctore: accedit Johan Rossen contra Lutheri captivitatem Babylonicam. 12mo. *Parisiis*, 1562."

The "reader" might, we think, have attended to the distribution of capitals, which is far from uniform; here are three neighbouring entries from p. 301:—

"The origin of Floral structures."
"The making of Flowers."
"The Origin of Plant Structures."

But the Catalogue is a valuable addition to the Society's publications, and will be welcomed by the Fellows as a guide to the important library of which they are collectively the owners. We cannot, however, help expressing some surprise that a charge should be made upon them for the work, especially as that charge cannot possibly defray the expense of production.

If we are not greatly mistaken, it was originally determined to supply the Catalogue to Fellows in the same way as the other publications of the Society; and the alteration of this determination was caused by the waste of money involved in the printing of the Catalogue of Periodicals to which reference has already been made. No one will grudge 5s. for so handsome a book as this, but those concerned have a right to complain of the spending of the Linnean Society's funds upon a work, the uselessness of which was only discovered when it had been printed off and to some limited extent actually issued. There is a Library Committee of the Linnean Society, but apparently the supervision of the Library Catalogue does not come within its duties: had it done so, a large and useless expenditure in printing might have been avoided.

ARTICLES IN JOURNALS.

Bot. Centralblatt (Nos. 44–7). — H. Rothdauscher, 'Ueber die anatomischen Verhältnisse von Blatt und Axe der Phyllantheen.' — (No. 46). C. Mez, 'Der heutige Stand der bakteriologischen Systematik.' — (No. 47). W. Futterer, 'Zur Anatomie und Entwicklungsgeschichte der Zingiberaceæ.' — H. F. Jonkman, 'Ueber einen Keimungs Apparat.'

Bot. Gazette (Oct. 20). — E. A. Burt, 'Development of receptaculum of *Clathrus columnatus*' (2 pl.). — D. T. MacDougal, 'Mechanism of movement and transmission of impulses in *Mimosa*, &c.' (1 pl.). — M. A. Nichols, 'Morphology and development of certain pyrenomycetous Fungi' (3 pl.). — M. E. C. Horn, 'Organs of Attachment in *Botrytis*.' — C. F. Millspaugh & L. W. Nuttall, 'New West Virginia Lichens.'

Bot. Notiser (häft 5). — A. G. Eliasson, 'Svampar ur C. J. Johansons herbarium.' — C. Störmer, *Puccinia Polemonii*, sp. n.— T. Westergren, '*Malva Alcea* × *moschata*.'—O. Gelert, '*Batrachium peltatum suecicum*.' — O. Rosenberg, 'Om dem anatomiska byggnaden hos *Parnassia palustris*.' — E. Nyman, 'Om några kotteformer af gramen.'—L. M. Neuman, '*Carex muricata microcarpa*.'

Bull. Soc. Bot. Belgique (xxxi, fasc. i.: Nov. 17).—E. de Wildeman, 'Census Chytridinæarum.' — Id., 'Sur quelques espèces du genre *Vaucheria*.' — G. Lochenies, 'Lichens récoltés dans les Ardennes Belges.' — F. Renauld & J. Cardot, 'Mousses nouvelles de l'Amérique du Nord' (2 pl.). — P. A. Saccardo, 'Fungi aliquot brasilienses phyllogeni' (2 pl.). — F. Crépin, 'Revision des Roses des herbiers de Lejeune et de Mlle. Gibert.' — J. E. Bommer & M. Rousseau, Fungi Costaricenses. — J. E. Bommer & H. Christ, Filices Costaricenses. — C. DeCandolle, Begoniaceæ Costaricenses. — H. Hallier, Convolvulaceæ Costaricenses. — F. W. Klatt, Compositæ et Irideæ Costaricenses.

Bull. Soc. Bot. France (xliii, 7: "Sept. & Oct.").—C. Degagny, 'Sur la division du noyau cellulaire.' — J. Daveau, 'Sur quelques *Lotus* de la Section *Tetragonolobus*.' — M. Gomont, 'Contribution à la flore algologique de la Haute-Auvergne' (2 pl.). — A. Chatin, 'Terfas d'Espagne et du Maroc.' — M. Cornu, 'Les Crescentiées cultivées au Muséum.'

Bull. de l'Herb. Boissier (Oct.). — J. E. Bommer & H. Christ, 'Filices novæ.' — H. Christ, 'Filices Faurieanæ.' — J. Briquet, 'Mentharum novarum vel minus cognitarum decades.'—J. Amann, 'Excursion bryologique dans la Haute-Engadine.' — F. Crépin, *Rosa algoiensis*, sp. n. — H. Schinz, 'Die Pflanzenwelt Deutsch-Südwest Afrikas.'

Erythea (Nov.).—W. A. Setchell, '*Eisenia arborea*.'—C. P. Nolt, 'The antheridia of *Champia parvula*' (1 pl.). — E. L. Greene, *Thelypodium amplifolium*, *Stanleya bipinnata*, spp. nn.

Journal de Botanique (Oct. 16, Nov. 1). — R. Chodat, *Botryococcus Braunii* & *Oscillatoria rubescens*. — (Oct. 16). E. Roze, *Clonothrix*, n. gen. (*Cyanophyceæ*). — E. Malinvaud, 'Nouvelles floristiques.' — (Nov. 1). A. L. Guignard, 'A. A. L. Trécul' (8 Jan. 1818–15 Oct. 1896).

Journal of Linnean Society (see p. 519).

Oesterr. Bot. Zeitschrift (Oct.). — A. J. Krása, *Petasites kablikianus* (1 pl.). — A. Hausgirg, 'Uebersicht der vier Typen von regenscheuen Blüten, deren Pollenschutz etc., auf einem phytodynamischen Principe beruht.' — F. Arnold, 'Lichenologische Fragmente.' — (Nov.). L. J. Celakovsky, 'Ueber die ramosen Sparganien Böhmens' (1 pl.). — R. v. Wettstein, 'Zur Systematik der europäischen *Euphrasia*-Arten.' — V. Schiffner, 'Bryologische Mittheilungen aus Mittelböhmen.' — L. Keller, *Dianthus Fritschii* (*D. speciosus* × *barbatus*). — J. Robinsohn, 'Ueber die Drehung von Staubgefässen in den zygomorphen Blüten einiger Pflanzengruppen und der biologische Bedeutung' (1 pl.). — A. Hausgirg, 'Ein Beitrag zur Kenntnis der Phyllokarpie.'

BOOK-NOTES, NEWS, &c.

The second part of vol. vi. of the *Flora Capensis* has been issued; Mr. Baker concludes the *Amaryllideæ*, and gets through a considerable part of the *Liliaceæ*. Dr. Dyer contributes a preface, although he says the part "needs but a few words of introduction": does it need any? If each part is to have a preface, the result will be novel and curious when the volume is bound up. The introduction seems to have been hurriedly written—*e. g.* "The advantage of consulting living specimens is of peculiar advantage," &c.

We have received a prospectus of "The British Mycological Society," a new organization, the objects of which are stated (in a sentence of portentous length) to be "the study of Mycology in all its branches, systematic, morphological and pathological, the publication of annual reports recording all recent discoveries in any branch of mycology, and more especially giving a brief synopsis of the work of European Mycologists and the recent additions to the British Fungus Flora, and an annual week's meeting or foray to be held at some place previously determined at the annual meeting, preference being given to those places where a local society would make arrangements for excursions and provide a meeting room for the arrangement of species collected, members of such local society being allowed to attend the excursions and meetings of the British Mycological Society and a list of species found furnished to such society, that, during such week's foray, the President shall deliver his annual address and papers be read, and the species collected systematically arranged and exhibited." The annual subscription is to be 5s. Mr. George Massee is to be the first President, and Mr. Carleton Rea, of 34, Foregate Street, Worcester, the Hon. Secretary.

Mr. Schlechter writes from Cape Town that his last trip to Namaqualand has yielded above 1200 numbers, among which are many interesting novelties, including five new genera and about a hundred and fifty new species.

The Linnean Society is making up for the delay in its publications which has lately occasioned some grumbling. A part of vol. xxxi. of the *Journal* (dated Oct. 31) containing "Redescription of Berkeley's types of Fungi" by Mr. Massee, and a paper on the "Relation of the Growth of Foliage-leaves and the Chlorophyll Function," by Prof. MacDougal, was followed on Nov. 2 by the whole of vol. xxxii. containing 570 pages and seven plates. This contains several important memoirs. Mr. F. N. Williams occupies a third of the volume with the monograph of *Silene* on which he has been engaged for many years, describing 390 species. Mr. Ridley takes 200 pages for his enumeration of the *Orchideæ* and *Apostasiaceæ* of the Malay Peninsula, and has also a paper on Malayan *Cyrtandraceæ*. Messrs. Scott Elliot, Stapf, Rolfe, and Wright contribute papers respectively on *Pentas*, *Sararanga*, *Vanilla*, and *Stemona:* there is a posthumous paper on New Zealand lichens by Dr. J. Mueller (Müll. Arg.), Mr. Seward writes on a new *Pinites*, and Mrs. Weber van Bosse on *Pseudocodium*, a new genus of Siphonean Algæ. There are also two papers of special interest to British botanists: one by Mr. G. C. Druce on *Bromus interruptus*, and one by Mr. E. J. Lowe on discoveries resulting from the division of a prothallus of a variety of *Scolopendrium vulgare*. Bibliographers, by the way, must note that the publication of the *Bromus* dates from this Journal for Dec., 1895 (p. 344), where Mr. Druce gives a short diagnosis, not referred to in the paper. With a new number of the *Proceedings*, bringing the record down to the end of last June, and the Library Catalogue noticed on p. 516, it must be admitted that the Linnean Society starts its new session with a remarkable output. We hope, by the way, that the completion of the "Index Floræ Sinensis," of which, with the exception of a very slender instalment, nothing has appeared since 1891, is not being lost sight of.

There is, however, room for improvement in the manner in which the Society's publications are produced. The type and paper are good enough, but economy might well be exercised in many directions as regards the space occupied, which would of course result in a corresponding saving in the money expended. There is nothing like the extravagance which is so conspicuous in the Transactions, but certainly space could be saved in many ways. There can be no reason, for example, for giving a separate line to each of the habitats in Mr. Ridley's long paper, or to the "geographical limits" in Mr. Williams'; in the latter, too, the often copious synonymy might be run into one paragraph, instead of each name having a line to itself. An occasional use of thick black ("clarendon") type would often make the papers more easy of consultation, although this might be considered a daring innovation. Moreover, the proof-reading might be more careful. We are well aware that this remark may be met with a *tu quoque;* but "contesti" and "exterioses" (for "contexti" and "exteriores") in one line (p. 209), followed three lines after by "progatio" for "propagatio," should not be found in the publications of a learned Society; and numerous others might be cited. One at least of the papers should have been competently edited; a Society like the Linnean should not issue unpublished names without diagnoses. We note that Dr. Mueller's paper was communicated to the Linnean Society "with the sanction of W. T. Thiselton Dyer, C.M.G., C.I.E., F.R.S. F.L.S." Technically speaking, no doubt Dr. Dyer's permission would have to be obtained before any work in the Kew Herbarium could be undertaken, but this form of acknowledgment seems somewhat unusual.

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CORRIGENDA.

P. 57, line 4 from bottom, for "Wexford" read "Waterford."
,, 62, ,, 12, for "Mahgunihy" read "Magunihy."
,, 66, ,, 5, for "1 to 10" read "1 to 40."
,, 66, footnote, for "I." read "L."
,, 72, line 16, for "1884" read "1844."
,, 140, ,, 11 from bottom, for "manc" read "manca."
,, 142, first par., for "Gaumier" read "Gaumer."
,, 172, last line, for "Denbigh" read "Montgomery."
,, 198, line 13, for "*aculeatum*" read "*aculeata.*"
,, 398, ,, 16, for "gesnerifolia" read "gesneriflora."
,, 413. Under *Dyschoriste somalensis* should be cited as a synonym *Phillipsia fruticulosa* Rolfe in Bull. Misc. Inform. 1895, 223, and Ic. Plant. t. 2445. Mr. C. B. Clarke agrees that the plant is a true *Dyschoriste.*
,, 494, line 19, for "1887" read "1892."
,, 500, ,, 10 from bottom, for "Psammotropha" read "Psammotrophe."
See p. 509 for corrections in First Records of British Plants.

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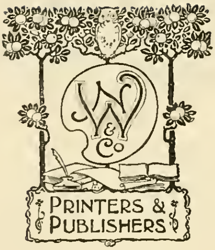
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